STEEL
Became
INDUSTRY WEEK
JANUARY 5, 1970

STEEL
The Metalworking Management Weekly

EDITORIAL INDEX

VOLUME 165

July 1 to December 31, 1969

Subject Index 3

Company Index 12

THE PENTON PUBLISHING COMPANY

Penton Building, Cleveland, Ohio 44113

SUBJECT INDEX

A

Abrasives: See Grinding

Accounting:
Accounting procedure changes may be growth barrier to conglomerates, 11/17, p.23

Accounts Payable:
CAPPS, computer system for North American, 12/1, p.40

Accounts Receivable:
AMTDA problem: Money and how to collect it, 10/20, p.13
Collecting remains problem for suppliers: Credit Research report, 10/6, p.19

Acid Handling: See Pickling

Acquisitions:
Gulf & Western: Acquisitions bring wide diversification—gets manufacturing operations into line, 11/24, p.50

Adaptive Control: See Numerical Controls

Adhesives: See Joining

Advertising Index:
Help-wanted ads drop, NICB report, 7/7, p.25
Help wanted ads reach record levels, but unemployment and benefit drawing increases, 8/18, p.29
Help wanted ads show gain in July 9/8, p.12; Sept. 11/17, p.21; Oct. 12/8, p.23

Aerospace Industries Assn.:
Drill standard cuts costs, 8/18, p.19
Harr's predictions for 1969 and 1970, 12/29, p.13

Aerospace Industry:
Aerospace experts must take social initiative, 12/8, p.88b*
Aerospace firms diversifying, 7/14, p.15
Aerospace industry looks the earth over (STEEL Feature), new market areas, 9/22, p.21
Orbital manufacturing technology, 7/28, p.17
Professional people laid off, employment figures, 9/8, p.18
Sales drop seen for 1969, 1970 forecast, 12/29, p.13

Africa:
Copper deposit discovered, 12/8, p.29
Mining prospects, U. S. Steel, 9/15, p.27

Aircraft:
Air freight terminal for L-500 slated by Lockheed, 7/28, p.19
Bending tough tubes for Boeing 747, 12/8, p.27
Graphite replacing steel in brakes of TriStar L-1011, 12/29, p.16
Jetliners in late '70s may seat up to 1,000, 8/4, p.17
Perforated panels (thin aluminum and Inconel) lessen jet noise, 12/8, p.88c*
Propeller for vertical-short takeoff teams titanium, fiber glass, 10/6, p.29
SST go-ahead, Boeing optimistic, 9/29, p.21

Air Cushion:
Grumman proposed tracked air cushion vehicle for intercity travel, 9/22, p.26

Air Pollution:
Air code violations by steel firms predicted by Hunter, U. S. Steel, 12/22, p.12
Air pollution code for control pushed in Pittsburgh area, 12/8, p.21
Automakers face pollution suit, Illinois, 9/29, p.23
Bendix electronic fuel injection system, pollution control, 11/3, p.9
Chemico's OG process cuts pollution, 8/11, p.26
Chicago steel mills, output overtakes controls, 7/21, p.17
Clean air codes may call for shift in fuels, 11/24, p.31
Control equipment market booms, 12/29, p.18
Los Angeles monitors air pollution by computer, 10/20, p.15
Rust/Von Roll incinerator disposes of municipal or industrial wastes without polluting air, 7/14, p.36
SIFCO switch to gas instead of coal for steam boilers solves pollution problem, 10/6, p.60
Tax pollution and waste: Teller, Cooper Union, proposal, 7/7, p.21

Airports:
Container system cuts baggage delivery time, 8/25, p.18
Ice detector system for runways, 7/14, p.22
Jumbo jets have airports hustling, 8/4, p.23
Kennedy International: Three-door bridges handle people, 11/24, p.24
Pan Am readies Kennedy International for 747s, 8/4, p.24

Air Traffic:
3-D radar systems for air control, 10/27, p.21
Free world airlines cargo traffic vs. passenger traffic, 9/22, p.25

Alaska:
Survey on Alaskan rail-highway into north and northwestern frontier, 10/6, p.23

Alcoholism:
Cost to business, 9/29, p.21

Alloys:
Aluminum alloy codified, 10/27, p.23
ILZRO 12, new zinc base foundry alloy, 7/7, p.88e*
Low alloy steels made corrosion resistant by nitriding, Hungarian source, 8/4, p.17
Magnesium alloy ZE1A casts with ease, aerospace use, 8/11, p.52

Aluminum Industry:
Aluminum capacity by 1980, need to raise capital: MacGregor (AMAX) reports, 12/8, p.21
Aluminum growth for electrical uses, 9/8, p.12
Aluminum price hikes expected to continue, both ingot and fabricated products (Kaiser executives forecast), 11/24, p.21
Industry must prepare to compete on an international basis and to combine on major research programs, Harper (Alcoa) predicts, 12/29, p.13
Venezuelan plant expands, 9/29, p.29

American Assn. of Industrial Management:
How to get along with a union shop steward, 8/4, p.41
Train foremen to bridge shift-to-shift barriers, communications links, 7/14, p.44

American Die Casting Institute:
Cost saving techniques in dies, 10/13, p.23

American Iron & Steel Institute:
Bay Estes joins as vice president-economist, 10/6, p.25
Pollution fight intensified, survey indicates, 8/25, p.16
Standardized paperwork and product nomenclature among goals, 9/22, p.12

American Machine Tool Distributors' Assn.:
Hoffman chides 'moneyboy' proposals, outgoing president, 10/13, p.22
Kelley comments on drop in new and used tools, 9/29, p.19
Money and how to collect—problem, 10/20, p.13
Uniform depreciation rates urged, 7/14, p.17

American Management Assn.:
Heller and Stein speakers: Ground rules needed to curb wage-price spiral, 11/17, p.23
Marcus: Meeting plight of foremen, 8/4, p.25

American Metal Stamping Assn.:
1970 outlook good: Keith reports, 12/1, p.52

American Society for Metals:
Show: New fashions of metals design, 11/17, p.40m*

American Society for Testing & Materials:
BOF steel wins more specs, 9/8, p.14

American Statistical Assn.:
Economy cooling agonizingly slow, Dr. Cohen forecast, 8/25, p.16

American Trucking Assn.:
EDP for trucking industry, report, 7/14, p.9

Appliance Industry:
Advances in appliances forecast, 11/17, p.27
Affluence threat to energy of industry: Beebe, Philco-Ford, 7/7, p.21
Industry report, 9/15, p.111
Major appliance sales up, 12/29, p.15

Argonne National Laboratory:
How hydrogen embrittles, scientists report, 7/7, p.25

Atomic Energy:
AEC agreement with Republic Steel, Californium-252 use in lab, 10/27, p.21
AEC reports nuclear powerplant construction, 11/3, p.18
Atom fusion power nearer reality, 9/8, p.12
Nuclear industry, Stanford study, 10/27, p.20
X-ray analyzer finds element's quantity, 12/8, p.71

Australia:
Alcan opens Kurri Kurri plant, 11/10, p.24
Alumina refinery, 2nd to be built, 10/20, p.16
Aluminum product exports by 1980, 7/28, p.16
American steelmakers eye Australian venture, 9/29, p.19
Australians shift continuous steelmaking into second gear, Worcra process, 10/20, p.41† and 10/27, p.48a*
Big alumina facility proposed, Netherlands firms, 7/14, p.68
Four mining projects planned for eastern Victoria, 9/22, p.15
High grade nickel source, 9/15, p.27
"Instant town" to be constructed to serve alumina-bauxite project on Gove Peninsula, 12/29, p.17
Iron ore exporters negotiate for Japanese contracts, 11/24, p.24
Mineral lead within 30 years predicted, 9/29, p.29
Steel plants to up exports, 10/13, p.24
Trucking industry boost with new truck drive axle plant, 11/17, p.29
Victoria steelworks plan, 8/4, p.21

Automation:
Automatic factory: Who needs it, 12/22, p.32
Traditional business methods sows automation, Honeywell Binger reports, 11/3, p.18

Automotive:
1970 developments on model line, 9/15, p.15
1970 forecast, 8.5 million car sales, 12/15, p.14
Aluminum usage estimated, 12/1, p.15
AMC expects import share of market to diminish, 12/29, p.14
AMC goes into four-wheel drive, 12/15, p.9
Auto dealership: Automakers aim at mismanagement, 12/22, p.7
Auto firms charged with antipollution conspiracy, Northern Illinois, and California, 11/3, p.23
Auto output to boom, Ward's report, 7/14, p.19
Auto prices, FTC hearings, 9/29, p.11
Auto standards universal for safety, international, 10/13, p.22
Average age of auto buyers under 23, 9/15, p.15
Bump shops go franchise route—collision repair, 7/21, p.11
Bumpers-protective coming in '72 models—result of consumer griping and Congressional nudging, 11/17, p.7
Bus systems, Flint tries out portal-to-portal, 8/11, p.15
Checkered flag for hot car talk, muscle car, 12/1, p.7
Chevy looks down the road—DeLorean predicts, 9/8, p.7
Composite strip for auto trim planned for 1971 models, 7/7, p.88f*
Computer ready to replace electrical circuitry in autos, CEDAC system, 9/22, p.14
Convertibles: Coiffures, costs dent ragtop sales, 10/13, p.11
Design and engineering changes 'laid to rest,' 8/4, p.9
Electric car powered by lead-cobalt energy cells, 12/22, p.15
Electronic Data Processing, trucking industry, 7/14, p.9
Fleet car leasing trend to smaller cars, 9/29, p.23
Ford's program to minimize air pollution, 12/29, p.7
GM-Chevy minicar, names forecast (GMini, Pony), 12/22, p.14
GM (Kintigh): How to tackle last minute design change, 7/7, p.88d*
GM's Roche talks pricing, 9/22, p.7
Horsepower race down on the farm, Ford expands tractor operation, 10/6, p.13
Hydrostatic transmissions—nothing static, 11/24, p.11
Indian Head stalks Detroit, 11/10, p.11
Italian lab car, Miura, 8/18, p.11
Lear working on gas turbine/electric cars, 12/15, p.17
Muscle car described, 12/1, p.7
Oldsmobile pushes engineering, Cutlass Supreme, new car, at top of Cutlass series, 9/15, p.13
Plastic auto parts on cars and trucks, 10/6, p.21
Plastics soaring in Detroit, sheet molded fiber glass, 10/27, p.9
Racing car rules, ACCUS (impact on appearance of cars on highways), 7/7, p.13
Reliability pushed by Ford, others, 9/15, p.23
Retail stores test auto rentals (Sears, Grant, Montgomery Ward), 9/29, p.23
Safety: Passive systems pushed (air bag inflation, collapsible steering column), 10/20, p.7
Safety study (Cornell), deaths at intersections, use of computer, 8/25, p.9
Skid control system, 7/28, p.7
Smog may spark fuel injection, 11/3, p.9
Steam car research, AMC, 12/8, p.21
Tires at Ford are rayon-belt, 10/6, p.29
Truck output for '69, Ward's, 12/8, p.25

Code: *—*Metalworking Edition only;* †—*Metalproducing Edition only;* IE—*Industrial Equipment*

Truck-tractors get four wheel drive, over-the-road hauling, 7/14, p.23
Trucktrailer drivers can unload trailers with Foldfork attachment, 7/14, p.23
UAW sets its bargaining sights, 12/8, p.11
Zinc rejuvenation in industry, 8/18, p.9

B

Bar Mills:
Bar producers close generation gap (list of modern bar mills for era of quality), 9/29, p.57

Battelle Memorial Institute:
Energy cost reduction studied, 11/24, p.22
Modern bar mills, market studied, 9/29, p.57
Refractory wire drawing refined, German branch, 8/4, p.20
Sludge study may offer metal profits, 8/11, p.60d
Technique tests defects in composites such as honeycomb, 9/22, p.14
Titanium T-shapes, high frequency resistance weld, 7/7, p.80f*

Batteries:
A lithium, copper fluoride battery developed for NASA, 8/18, p.20
Undersea power, magnesium-steel wool battery can be stored indefinitely, 10/6, p.27

Behavior Science: See Managing for Productivity

Blacks: See Negroes

British Iron & Steel Research Assn.:
Powder deposited uniformly on face of a moving strip of metal with grooved rotating roll, 9/22, p.14
Radar checks blast furnace level, 8/11, p.26

Building Codes:
We need better building codes: Geo. Romney (HUD), STEEL Feature, 7/7, p.41
Where states stand on codes, 7/7, p.47

Bureau of Budget:
S.I.C. system being revised, 9/8, p.12

Bureau of National Affairs Inc.:
Median negotiated wage gain slips, 11/10, p.17
"Mod" dress and grooming standards unacceptable while job hunting (American Society for Personnel Administration), 12/29, p.14

Business & Defense Services:
Computerized monthly report on steel imports, 10/20, p.11

Business (Economy):
1969: Outcome compared to forecast (chart), 12/29, p.5
1969 outlook, growth rate, GNP (Chartener), 7/28, p.5
1970: Cloudy forecast, 12/29, p.12
1970: Something to disbelieve in—no typical forecast, 12/1, p.5
1970 forecast by business forecasters: Year we pay for financial sins of '60s, 12/22, p.20
1970 forecast, First Nat'l Bank of Chicago, 12/15, p.14
1970 forecast, NAPM, 12/15, p.15
1970 forecasters at NICB conference, 11/3, p.13
Banks may boost discount rate, 7/21, p.18
Barometers of business, 1st Nat'l Bank of Chicago forecast, 7/7, p.23
Barometers of business, gas appliances and plastics, 8/11, p.21
Barometers of business, NIDA report, 7/28, p.12
Business runs scared of forecasts, 12/15, p.5
Capital spending by corporations forecast, 12/1, p.11
Capital spending growth, Edie surveys show no letup, 9/22, p.12
Capital spending moves downrange—cooling inflation, 9/22, p.5
Capital spending plans (SEC), government economists not happy, 12/8, p.19
Consumer buying, 2nd half outlook (Chrysler cutbacks), 7/21, p.7
Economic slowdowns begin piling up, 11/17, p.7
Economist Stein (President's Council) addresses NABE: Pitfalls policy makers may stumble into, 10/6, p.7
Economist Weidenbaum, Treasury Dept.: Keep braking economy, 11/17, p.21
Economists predict 3rd quarter, government spending will fit into economy, 8/25, p.7
Economy cooling agonizingly slow: Dr. Cohen (ASA), 8/25, p.16
Economy shown in graphs, 1966-'69, 9/15, p.7
GNP faster than profits, bank survey, 8/18, p.17
Inflation beginning to end? Economists' views, 10/6, p.19
Inflation continues to erode economy, industry trendline, 8/18, p.25
Inflation cure: Dr. Pierre Rinfret, 9/29, p.7
Inflation: Cushions needed to soften slowdown, 10/13, p.7
Inflation, government officials predict no letup, others see it subside, 9/8, p.5
Inflation kept out of capital spending budget: Armco and Kaiser Engineers speakers, 10/6, p.23
Inflation kindles worker revolt (consumer), Goldfinger report at Pitt conference, 10/27, p.7
Inflation rate for U. S. economy in 1970 forecast by Commerce Sec'y Stans, 11/3, p.13
Inflation reduced, DoD cut in spending, 12/8, p.7
Inflation-trillion dollar threatens, 11/24, p.7
Metalworking profits, 1st half, 8/11, p.7
Metalworking 3rd quarter survey: Profits give 'squeeze' the slip, 11/3, p.7
Minorities should be in economic mainstream: Brimmer, FRS, 9/8, p.13
Money squeeze, industry pinches pennies to beat shortage, 7/21, p.23
Prosperity and inflation in the 60s, 12/29, p.34
Railroad head sees steel, packaging bright in '70, 11/10, p.53
Recession in '70? Little chance, Rinfret, 11/24, p.20
Recession—time to bone up on homework, industry trendlines, 7/14, p.25
Recession, who fares best? 11/10, p.7
STEEL's panel of economic consultants view 1970, 10/6, p.45
Steelmakers' profits, 3rd quarter, 11/3, p.17
Tight money: A challenge to shrug, 7/7, p.7
Tight money, high interest rate, affect borrowing, 8/4, p.18
Unemployment is now the issue in the anti-inflation picture, 10/20, p.5
Vietnam peace: Treasury economist optimistic about impact, 8/25, p.24

Business Equipment:
Growth in information processing industry, 11/3, p.17
Industry market report, 9/22, p.48

Business Failures:
In electronic industries, 7/7, p.23

Business-Government:
Gap with government widest at middle management level (Packard, deputy Defense Sec'y and Chartner, ex-government economist), 11/17, p.36

C

California:
Buy-American Act, court action backed by traders, 12/1, p.12

California Institute of Technology:
Prof. Gray: Crash program rash leads to indifference, 11/3, p.45

Canada:
Auto Pact Agreement pushed by U. S., 12/1, p.15
Capital spending up, Chicago Commerce report, 9/8, p.12
ECC emphasizing manufactured goods, 11/17, p.40d*
Four firms to explore copper claims in Quebec, 8/25, p.20
Inco offers price settlement to USA strikers, 11/17, p.21
Iron ore strike, peace starts mills scrambling, 8/18, p.15
Labor costs for Canadian steel closer to U. S. levels, 11/10, p.19
North Country—steelmen maintain momentum (STEEL Feature), 9/8, p.29
Steel producers, integrated and nonintegrated (chart), 9/8, p.32

Capital Spending: See Business (Economy)

Case Western Reserve University:
Prof. Lawyer: Small firms, how to keep alive, 11/3, p.41

Casting, Castings:
Continuous slab casting pays consumer dividends at Weirton, 10/20, p.23
Continuous strip caster, reverberatory furnace to be installed by Archer Products Inc., 12/29, p.16
Emralon 310, a resin-bonded polytetrafluoroethylene coating cuts rejects, 7/21, p.41
Loma automatic handles slabs, 8/11, p.60b
'No frills approach' to continuous casting, Rokop-Gibson concept, 12/8, p.73
Prestcast, new titanium ingot process, 9/15, p.58b*
Slab casting and sawing system at Revere Copper, 7/7, p.80e*
Squeeze castings, IITRI study, 8/18, p.19

Census:
1970 census: Businessman's stake, 7/7, p.19

Ceramics:
Ceramic magnetics made by Amplex—for small electric motors and loudspeakers, 8/11, p.53†

Chase Manhattan Bank:
Butler (economist) on inflation, 8/18, p.28

Cleaning:
Oscilloscope plots cleanliness, stainless billet sections, ultrasonic inspection technique, 8/18, p.48
Ultrasonic cleaning, in-line system at Branson Instruments, 12/22, p.34

Cleveland:
Steelmakers face charge of water pollution, 9/29, p.33

Coal & Coke:
Aussies look at coke briquets size of duck eggs for blast furnace use, 9/8, p.13
Coal strikes pinch steelmakers, 8/25, p.17
NCA forecasts coal still power leader, 12/15, p.17
Reclamation of coal strip mined lands, 10/6, p.60a*
Polish engineers report fully automated coal mine, 8/11, p.27

Coated Steels:
Coated steel stands in for stainless, English research, 11/17, p.29

Coil Coaters:
Industry reports growth, 10/27, p.33

Coil Coating:
Electron guns cure metal coatings in seconds: 'Instant' curing nears production, 7/21, p.32

Cold Rolling:
Savings shape up from precision cold rolling, Universal-Cyclops Titusville, Pa., plant, 8/4, p.40

Colleges:
Grads' starting pay up, 7/21, p.18
John Carroll APM program, manager-student class, 8/18, p.36

Communications:
Allis-Chalmers' Stewart defines basic rules for successful company communications, 9/15, p.58d*
Good listeners are good leaders: Effective listening, a tape method by Xerox, 10/13, p.50
Train foremen to bridge shift-to-shift barriers, communications links, AAIM study, 7/14, p.44

Company Operations:
Ohio Steel Tube: Right decisions raise production, adding facilities, etc., 7/7, p.63

Compensation:
Managers pay—sample the compensation cafeteria approach, 10/6, p.58

Components Industry:
3rd quarter inventories, 8/4, p.7
3rd quarter inventories, 11/3, p.56

Composites:
Coating carbon fibers with tungsten, English report, 7/14, p.22
Northrop builds composites specialists group for advanced aircraft, 8/11, p.26
Resistance spotwelding predicted for composites of aluminum reinforced with boron filaments, 10/13, p.23

Computer Consultants:
Computer consultants aim at service centers: Ken Baker, Comsi reports, 9/22, p.35

Computer Industry:
TRW (Muchmore) reports: Computer spurs data boom, an information revolution, 12/8, p.64

Computer Programs: See Management Systems

Computers, Data Processing:
Aerospace ponders computer power (CAD and CAM), 9/29, p.27
Amfacts, computer sends cost facts to managers (formed by Amforge), 9/29, p.40a*
Blind find success in computer programming, 10/20, p.13
Boeing organized computer design as corporate level (CAD), reduces costs, inventories, 7/28, p.26
CAMELOT, design information from sketches, 12/22, p.15
Computer aided design (CAD) and manufacturing (CAM): Logjams block computerized production, 12/15, p.36
Computer process control alerts to breakdown, 7/21, p.41
Electronic data processing, trucking industry, 7/14, p.9
Gas flow computer, 12/22, p.15
Heat exchanger, computerized tube assembly, 9/15, p.80b*
Image analyzer offers print out, 12/29, p.28
Inventory taking simplified by Monarch Marking Systems' flashlightlike device, 12/29, p.16
Lockheed steps up computerized manufacturing, 12/22, p.17
Minicomputers invading consumer markets, 10/27, p.32
Process computer tests truck engines, White Motor, 9/8, p.36
Rohr Corp., keeps tabs on work in process via Mabel, computer and Touch Tone telephone system, 7/7, p.48
Superfiche, a microfilm records-keeping setup, 7/7, p.80e*
Underground data center proposed, Calif., 12/22, p.13

Conglomerates: See Mergers

Construction Industry:
Anti-inflation policies to hurt industry in '70s, 11/10, p.53
Industry report: Construction equipment men reassess their route, 10/27, p.64
Package deal bidding rise in steel and concrete market seen, 12/29, p.14
Roger Blough crusading to curb construction costs, 12/29, p.19

Construction Materials:
Steel studs vie for job in home building market, 8/25, p.44d*

Code: *—*Metalworking Edition only;* †—*Metalproducing Edition only;* IE—*Industrial Equipment*

Consumer Affairs:
Consumer Adviser — Virginia Knauer talks tough on product safety, 9/15, p.79
Senate to get guarantee bill, 8/25, p.15

Consumer Buying:
Consumer credit use forecast, 12/22, p.12
Michigan Center survey, 2nd half, 7/21, p.7
NICB survey, consumer cut backs, 12/1, p.11
University of Michigan survey: Caution lowers buying plans, 10/20, p.12

Consumer Problems:
Spotlight on consumerism: 'Business as usual' is not (President's committee), 10/11, p.49

Consumers:
Consumer pessimism mounting, 7/14, p.15

Constant Conveyors Case: See Managing for Productivity

Containerization:
A boom in new handling facilities pushes investments, 7/14, p.19
Container pools promise lucrative leasing profits, 9/29, p.40d*

Cornell Aeronautical Laboratory:
Study of auto deaths at intersections—computer use, 8/25, p.9

Crime:
Business has responsibility in battle against crime: Morgenthau, U. S. District Atty., 7/7, p.38

Crystals:
Cheaper way to make crystals, Netherland lab, 10/6, p.27
Liquid crystals bird-dog flaws, 10/6, p.49

D

Decision Making:
Ohio Steel Tube: Right decisions raise production, 7/7, p.63*, 8/4, p.46†

Defense:
Defense spending cut for '71: Greenspan, economic advisor to Nixon, 12/8, p.7
Defense spending data misleading: Dr. Passer, sec'y of economic affairs, 12/8, p.23
Defense spending slash projected, 11/24, p.19
DoD new procurement practices: Legacy of the C-5, 11/17, p.33
DoD policies hinder small firms, 11/10, p.19

Defense Contracts:
Lockheed tops contract list for '69, 11/10, p.24
Sen. Proxmire charges Pentagon 'lax' in small-item buying, 12/8, p.23

Degreasing:
Vapor degreasing solvent cleans Boeing 747 engine, made by Dow, 12/15, p. 40b*

Depreciation:
AMTDA urges uniform depreciation rates, 7/14, p.17

Design:
How GM tackles last minute design changes, 7/7, p.88d*
Stubbs, industrial designer: In machinery, good looks is a by-product, 7/21, p.42* and 7/28, p.30†

Developing Nations: See Foreign Investments

Diamond Wheels: See Grinding

Diecasting Industry:
Diecasters benefiting from Nextel coating, 11/17, p.40h*
Diecasters face challenge of plastics, 10/20, p.13

Distribution:
Shooting for better distribution in getting goods to market, STEEL Feature, 8/11, p.37

Distributors:
1970 industrial distributors will need controls and innovation, 11/3, p.45
Manufacturer looks at distributor's future: Nelson (Norton Co.) forecasts trends, 11/10, p.48
Nelson (Norton) forecasts changes in buyer/supplier relationship, 10/27, p.17

Diversification:
Aerospace firms diversifying, 7/14, p.15
Gulf & Western: Acquisitions bring wide diversification—gets manufacturing operations into line, 11/24, p.50
Inland studied diversification into nonsteel areas, 9/29, p.25

Drilling, Boring:
Microdrilling rig drills molybdenum and stainless, 12/29, p.28

Drills:
Aerospace drill standard, 8/18, p.19
Angle drill features a 60 degree flute helix angle, 8/4, p.20

Dumping:
Alleged dumping of pig iron by seven countries investigated by Customs Bureau, 9/15, p.21

E

Eaton, Cyrus:
East-West trade: Cogent pitch from old pro, 8/18, p.43

Economy: See Business (Economy)

Editorials:
Appliance Aftercare, 12/15, p.13
Boycott in Reverse (GE-AFL strike), 12/22, p.9
Dangers of Dependence (overseas steel supplies), 9/15, p.17
Drivers or Charmers?, 9/1, p.9
Goodby And Hello, 12/29, front cover
Inflation: Fight Goes Badly (Administration), 10/6, p.17
Leisure Poppycock, 12/1, p.9
Let Little Brother Do It (government inefficiency observation of Peter Drucker), 7/14, p.13
Look Who's Talking (Congressional call for wage-price guidelines), 8/11, p.17
Model T Housing, 7/7, p.17
Modern Tantalus (inflation study by Terbrogh), 7/21, p.15
Modular Building, 8/25, p.13
New Dimension, Japanese industrialist views on profits 10/27, p.13
PR (note from Treharne, Cleveland Ad Club), 9/29, p.17
Policy Without Reason, 11/17, p.17
Rubber Salaries, 11/24, p.17
Solutions For Hire (aerospace faces other fields), 9/22, p.9
Studying Management (training courses), 9/8, p.9
The Disenchantment (costs of government), 8/18, p.13
The Move You Called, INDUSTRY WEEK, 12/8, p.17
The PYH Factor, 11/10, p.13
The Unwill to Work, 10/13, p.15
The Wage Gap, 8/4, p.13
Think Tankmanship, 10/20, p.9
Turning America On (investment and work, antidote to inflation), 11/3, p.11
Wrong Button (Nixon Adm. on inflation, 7/28, p.9

Electric Batteries:
Battery power for offbeat vehicles (fire and pickup trucks, golf carts, etc.), 12/1, p.44a*

Electric Motors:
Picking right motor gets tougher—STEEL Feature, 10/13, p.37
Small electric motor tested at GE center, 11/24, p.23

Electric Power:
Underground power lines, Linde development, 7/7, p.25

Electrical Contracts: See Labor (IUE)

Electrocoating:
Radiation cured coil coating line, electron gun (accelerator), 7/21, p.32

Electrodes:
Nonconsumable electrodes (Durarc at Westinghouse) can cut melting costs, 7/7, p.80d*

Electronic Industries Assn.:
Business failures in industry, 7/7, p.23
Consumers keep up electronics buying, 10/6, p.60e*
Electronic color code changes, 11/3, p.19
Forecast of defense and space budgets, GNP 10/13, p.19
Industry report, 7/21, p.56
Japan's electronics growth, 9/15, p.81
Pleads to rebuild tariff walls (GATT), 9/22, p.16
Shepherd Jr. suggests industry study group, 7/7, p.21

Electronics:
Circuitry grows more complex Honeywell's correlator), 10/13, p.23
Computer to replace electrical circuitry in autos, 9/22, p.14
Electron beam cuts test time of circuitry, 11/10, p.21
Fluid logic controls new strapping machine, 10/6, p.60e*
French focus on electron microscope, 7/7, p.25
ICs turn tables faster with a rotary positioning readout system, 9/29, p.64d*
Integrated circuits for resistance welding controls, 11/10, p.23
NC equipment plays larger role: Zehnpfinnig, Bunker-Ramo, 9/8, p.65
Timing's latest tick: Control, 10/6, p.56

Electroslag Remelting:
Dr. Bhat (Mellon Inst.) predicts ESR to become billion dollar industry by '75, 9/29, p.25

Employee Benefits:
Alcan's salaried benefits for hourly men, 10/6, p.44d*

Employee Relations:
Incentives mean more than money, 8/11 p.60f*

Employment, Unemployment:
Aerospace layoffs, 9/8, p.18
Hard-core hiring made easier, aim of JOBS '70, 10/6, p.19
Job bank services in 55 cities, matching men and jobs, 11/10, p.52
Study shows unemployment compensation claims up, but help wanted ads reach record levels, 8/18, p.29
Unemployment is issue in anti-inflation, 10/20, p.5

Engineers, Scientists:
Aerospace layoffs, employment figures, 9/8, p.18

Engineers, Technical:
Desire to be social force in community, 12/29, p.15

Engineers, Technicians:
Technical manpower needs boost, NICB, 11/24, p.23

Europe:
ECSC concentrates on BOFs, 9/15, p.27
EEC steel overcapacity forecast in '70s, 8/25, p.20
EFTA imports from U. S. up, 9/29, p.29

Executives: See Management

Explosives:
Preforming solves problems in explosive forming, 9/22, p.44a*

Extrusions:
Cameron markets vacuum melted extrusions, 8/25, p.44h*
Hot finished extrusions cut NASA heat exchanger costs, 8/11, p.60b

F

Fabrication, Assembly:
Computerized tube assembly, heat exchangers, 9/15, p.80b*
Computers used in building Humble supertankers, 9/15, p.80d*

Fabricators: See Structural Steel Industry

Factories:
Automatic factory: Who needs it, 12/22, p.32

Farm Equipment:
Horsepower race down on the farm: Ford expands tractor operations, 10/6, p.13
International Harvester: Sophisticated control of machines, 11/3, p.18
Market reported steady, 10/6, p.21

Fibers:
Coating fibers with tungsten aids composite, English report, 7/14, p.22
Dow develops hollow fibers for purifying brackish water, 8/25, p.18

Filaments:
More jobs for boron filaments, 8/4, p.20

Financing:
Finding financing turns company moneymen gray, Industry Trendlines, 10/13, p.30

Finishes, Coatings, Paints:
Adhesive coated film (Spot-Stik) protects stainless strip prior to fabricating, 9/22, p.36
Electric conducting paint, English report, 7/21, p.20
Electrocure for paints, Ford plant, 8/25, p.18
Epoxy paints borrow water based approach (General Mills), 7/14, p.69
Fluidized bed coatings cut rejects, 8/4, p.45
Fluorocarbon paints, market report, 8/25, p.52
Metallizing coat for repairing fan blades—making repairs in advance, 9/22, p.36
Nextel coating for diecastings, 11/17, p.40h*
Refractory spray-on coat protects semifinished steel from oxidation, 8/25 p.18

Fleet Buyers: See Leasing

Fluid Power:
Fluid power producers boil over cheap copies: Culprit is Japanese firm and target is Vickers Div., 12/15, p.40d*
Industry sales report, 7/7, p.95

Fluidics: See Instruments & Controls

Fordham University:
Fr. Hogan: Steel urged to keep modernizing, capital investments, 9/22, p.13

Foreign Aid:
Ex-Im Bank offers help to exporters, 12/8, p.25

Foreign Competition:
Steel imports drop, six month figures, dock strike effect, 8/11, p.29
Steel imports go 'premium', fears turn to reality, 10/27, p.15

Foreign Investments:
Developing nations welcome American investments, 9/22, p.16
Foreign direct investment controls, industry criticism, 11/3, p.20
Foreign direct investment program for 1970, 12/29, p.12
Goodrich's Alexander: Tips on investing abroad, 12/1, p.15
Japan confounds would-be U. S. investors (Henry Ford demands U. S. rights as Japs enjoy here), 10/13, p.42
Latin America's possibilities, 10/20, p.38
Medium sized firms to gain edge overseas: Noriand, English banker advises, 12/8, p.47
Nova Scotia construction program to attract U. S. investors, 11/10, p.23
Short form for reporting investment data for small and medium-sized firms, 7/21, p.18

Foreign Management:
Can European business close management gap?, 8/4, p.44
Going overseas? Better check your deskside manner, 11/24, p.52a* and 12/8, p.58†
Overseas managers paid special 'hardship rates,' 8/11, p.27

Foreign Trade:
Barriers—international cooperation needed in reducing them (GATT), 12/29, p.20
East (Red Bloc) trade upward, 7/21, p.17
East-West trade urged by Cyrus Eaton: Cogent pitch from old pro, 8/18, p.43
Eastern (Red Bloc) markets, is U. S. missing a bet (Cyrus Eaton Jr.), 7/21, p.24
Exports up, imports down, 8/18, p.7
Commerce Dept. reports trade figures discouraging, 9/8, p.16
GATT annual fall meeting put off until Feb., 7/14, p.17
GATT ministerial meeting postponed, 9/29, p.29
Import markings, new rules of Bur. of Customs 8/18, p.18
Japan trade, U. S. takes tougher line, 9/22, p.11
Pacific Coast imports, exports up U. S. trade surplus, 10/13, p.34
U. S. inflation hinders foreign trade, Stans speaker, 12/1, p.11
U. S. must protect against protectionism; Speakers, 11/24, p.24
World trade surges, Commerce report, 8/4, p.21

Foremen:
Plight of foremen is real problem for industry, 8/4, p.25
Train foremen to bridge shift-to-shift barriers (communications links), AAIM report, 7/14, p.44

Forging, Forgings:
Counterblow forge with four hammers, Austria, 7/21, p.21
Counterblow hammer has own automation, cover pic, 7/14, p.29
Fabricating huge pressure vessel—isostatic pressure cylinder takes shape, Midvale-Heppenstall, 8/25, p.32
Giant stainless ingot, forged for core section of nuclear reactor, 12/8, p.29
HERF forging reaches production, 10/20, p.15
Liquid metal forging, IITRI study, 8/18, p.19
Titanium precision forging, Bergman Mfg., 7/14, p.22

Forging Industry:
1970: Industry looks for modest gain, 12/8, p.88b*
Are European forgemen sharper in shop practices? Views of Doehring (Acheson Colloids), 10/6, p.50
Forging people painfully push toward automation to stay competitive, STEEL Feature, 7/14, p.29
Independent forge shop bookings of forging orders up, 12/29, p.15

Forming, Bending:
10 ways to form superplastically, 12/15, p.26
Preforming solves problems in explosive forming flat blanks, 9/22, p.44a*

Foundries:
Arlington Texas cuts rejects with Emralon 310 coating, 7/21, p.41
Cupola has edge on melting costs, study, 7/14, p.22

France:
Electron microscope at Toulouse soon to operate, 7/7, p.25
Franc devaluation, no threat, 8/18, p.8

Fringe Benefits:
'Fringes' to be misnomer as worker benefits soar, 11/10, p.31

Fuel Cells:
Future of fuel cell questioned at Brussels Congress, 8/18, p.19

Fuels:
Low sulphur fuels for power generating, aid to clean air, 11/24, p.31

Fulmer Research Institute:
Coated steel stands in for stainless, 11/17, p.29

Furnaces, Ovens (Heating, Heat Treating):
Electric furnaces to use more scrap, 12/8, p.80
NBS researchers designed a heat pipe oven to aid in spectroscopic studies, 7/14, p.44b*
Walking beam furnace steps up rod production at Atlantic Steel, 8/4, p.39

Furniture Industry:
Sales, orders decrease, 10/20, p.25

G

Gages:
Flip gage cuts costs in multiple bending press brakes, 7/21, p.43*, 8/4, p.45†
X-ray gaging system monitors fast-moving sheet, 12/8, p.61

Gas Appliance Manufacturers Assn.:
Industry report, 12/8, p.88b*, 12/29, p.15

Gearmaking:
Ford rolls 27,000 pinion gears daily, computer control (cold heading instead of screw machining), 8/18, p.34
Gearmakers go chipless (new production methods), cold extrusion to powder metals, 8/18, p.31

Generating Equipment:
Allis-Chalmers reconsiders steam turbogenerator field, 12/29, p.14

Germany:
Metallizing plant and electric furnace steelmaking facility (pellet steel complex) in Hamburg, 12/15, p.19
Upward valuation of German mark aid to U. S. exports, 10/27, p.20

Getting Goods to Market:
Shooting for better distribution, 8/11, p.37

Government:
Air pollution suits charged automakers, Illinois court, 9/29, p.23
Antidumping Act invoked in Australian dumped steel products, 12/8, p.23
Antidumping continuing investigation, Australian steel products, 12/22, p.14
Antitrust:
Autodom suit charges pollution conspiracy, Northern Illinois and California, 11/3, p.23
Civil antitrust changes in laws covering trial and appeal, 8/4, p.18
'Don'ts' to watch for in trade relations (Kintner, atty.), 10/27, p.32d*
Bill proposed for trust fund to help cities finance mass transportation systems, 7/14, p.27
Building code bill (Rep. Moorehead) hearings delayed, 7/21, p.17
Buy-American Act, Calif. court action, 12/1, p.12
Commerce Dept. streamlines paperwork, no filing of shippers' export declarations, 9/29, p.29
Commerce Sec'y Stans addresses L. A. group—foreign trade policies under study, 11/10, p.23
Commerce Sec'y Stans forecasts 1970 brake on inflation, 11/3, p.13
Commerce Sec'y Stans invites business leaders to a Washington briefing, 11/10, p.21
Commerce Sec'y Stans, speaker: U. S. inflation hinders foreign trade, 12/1, p.11
Consumer Affairs headed by V. Knauer, tough on product safety, 9/15, p.79
Consumer Interests office gets complaints: Elizabeth Hanford, dir. of committee, 11/10, p.49
Consumer safety standards coming: Pertschuk speaker, 12/1, p.43
Consumer-warranty bill introduced by senators, 8/25, p.15
Customs Bureau investigates dumping of pig iron involving seven countries, 9/15, p.21
FTC studies auto prices, 9/29, p.11
Federal Maritime Commission, Helen Bentley may be next head, forecasts programs, 8/25, p.22
Federal Maritime program, assistance in ship construction, 11/3, p.15
Federal Reserve Bd., challenges in dealing with economy: Fed's reputation at stake, Martin's replacement is key, 10/13, p.31
Federal Reserve management changes, 10/27, p.20
Foreign investment reporting, small firms may use short form, 7/21, p.18
Gilbert named special trade representative, 8/11, p.23
HUD secretary-Romney: We need better building codes, 7/7, p.41
HUD's Harold Finger: What are 'operation breakthrough's' chances, 7/7, p.45
Health and safety bill draws reaction, 8/18, p.18
Housing programs, five ways to enter area cited by Dickerson, housing consultant, 11/3, p.24
Justice Dept. focuses merger hostility, no de-escalation for conglomerates and mergers, 7/21, p.16
Labor Sec'y Schultz warns contract negotiators on inflation, 8/4, p.17
Manpower program, more control to states and cities, 8/18, p.18
NLRB findings: Phelps Dodge and AFL-CIO stemming from copper strike, 8/11, p.19
Pollution enforcement, steelman calls for tax relief, 11/3, p.15
Pollution laws enforcement calls for tax incentives for industry, 10/27, p.38
Proxmire charges AF procurement unit 'lax' in small-item buying, 12/8, p.23
State and local government funds: Weidenbaum reports, 7/28, p.12
Steel industry arbitration panel (incentive pay): Simkin heads panel, 7/7, p.19
Tariff Commission Ruling: Due to imports, jobless win aid, 11/10, p.17
Trade Bill lags action, 11/24, p.21
Trade Bill needs business to speak out: Gilbert urges, 12/8, p.25
Trade Bill winning favorable reaction, 12/1, p.16
Treasury economist Weidenbaum: Optimistic about peace impact, 8/25, p.24
Tribus (science and technology, Commerce Dept.): Aerospace experts must take social initiative, 12/8, p.88c*
Wage, price controls out?, 7/28, p.13
Wage-price ground rules urged, Heller and Stein panel speakers, 11/17, p.23
Water Pollution Control: Hearings held, Cleveland steelmakers face charges, 9/29, p.33

Government & Industry:
Gap with government widest at middle management level, Packard (Defense sec'y) and Chartner (Wall Streeter), 11/17, p.36
Lockheed (Childs): Finding ways for government and industry to interface to solve national problems, 9/22, p.23

Graduates: See Colleges

Graphite System:
Acid handling (pickle bath heating) simplified by graphite system, 12/22, p.35

Great Britain:
Aluminum rolling mill complex slated, 11/17, p.29

Grinding, Polishing:
Diamond abrasive makes it possible to grind ductile metals, De Beers, 7/7, p.65
Diamond expert prophesies great future in grinding, ASTME speaker, 11/3, p.52b*
Match grinding process, large positioning tables, 7/7, p.80e*
Weak powders (thermochemical process) polish better, Russian source, 7/28, p.14

H

Hard-Core: See Training

Harvard University:
Dr. Brooks: Forecast for technology in the '80s, 11/17, p.56
Harvard Business School survey—salaries for managerial talent, 7/7, p.37
Schlesinger Jr.: The threat of leisure, 11/17, p.48

Heat Exchangers:
Computerized triumph for tube applications, 9/15, p.80b*
Extrusions-hot finished cut NASA costs, 8/11, p.60b*

Help-Wanted: See Advertising Index

Highways:
Maintenance is big business, 7/21, p.19

Hiring:
Labor Dept. seeks equal hiring, 11/17, p.23
Minimizing the risk (Nathan Barry Associates), 7/28, p.27
Real concern at ASTD seminar erases suspicion of dropouts, 10/13, p.51

Holography:
Program for development of 3-D holographic movies, flowchart, 12/8, p.54

Housing:
Alco plans partnership with small builders to mass-produce homes, proposal to HUD, 12/1, p.12
Assembly line techniques answer housing needs: Mobile crane swings factory-built module into place, 8/25, p.23
Congress announced need for dwelling units: Will private enterprise keep pace? STEEL Feature, 9/29, p.43
Funded market is answer to housing, 10/27, p.32
HUD's Harold Finger: What are 'operation breakthrough's' chances, 7/7, p.45
Industry forecast, negative 1969, 7/14, p.7
Low cost housing . . . where do we find the funds? Industry Trendline, 10/20, p.21
Private sector can make money in public housing, Dickerman, housing consultant, addresses HMA, 11/3, p.24
Romney (HUD): We need better building codes, 7/7, p.41
Steel and concrete combined in systems approach dev. by U. S. Steel and Perl-Mack, called 'Accent 70,' 12/15, p.16
Steel studs vie for job in home building market, 8/25, p.44d*

How To (series): See Managing for Productivity

Hydraulics:
Modular hydraulics modules, 9/8, p.14

I

Illinois Institute of Technology Research Institute:
Squeeze castings, or liquid metal forging study, 8/18, p.19

Incentives:
Employee incentives mean more than money: AMA seminar report, 8/11, p.60f*
Incentive coverage plan arbitrators handed Big 11 steel companies and the USAW, 8/11, p.19
Steel industry arbitration panel headed by Simkin: Issue-incentive pay, 7/7, p.19
USW incentive hassle—just beginning, 9/8, p.20

Incinerators: See Waste Disposal

India:
Aluminum complex slated, 10/6, p.27
Czechs build plant for India (grinding machines), 10/13, p.24

Indians:
Interprises on Indian reservations needed, 7/7, p.21

Industry Moves:
Industry moves to suburbia (Schaumburg, Ill.), 11/3, p.43

Industry Trendlines:
1970: Social conditions challenge business, 12/8, p.43
1970—tough labor year coming up, 12/1, p.17
Advent of jumbo jets has airports hustling, 8/4, p.23

Code: *—*Metalworking Edition only;* †—*Metalproducing Edition only;* IE—*Industrial Equipment*

Aerospace layoffs—here we go again, employment figures, 9/8, p.18
Air pollution control market booms, 12/29, p.18
Blough continues crusade to curb construction costs, 12/29, p.19.
Defense buying: Legacy of the C-5, 11/17, p.33
Electrical talks—time's running out (IUE-GE), 9/22, p.18
Finding financing turns company moneymen gray, 10/13, p.30
Findings confirm your wife's right about the budget, 11/24, p.29
Industry pinches pennies to help beat money squeeze, 7/21, p.23
Lockheed steps up computerized manufacturing, 12/22, p.17
Low cost housing . . . where do we find the funds? 10/20, p.21
Manufacturers jump on real estate bandwagon, 11/3, p.21
Manufacturing in outer space? 7/28, p.17
Marketing—holds key to change in '70s, 11/10, p.30
Nickel ante . . . users study their hands, 10/27, p.29
Small shops find training pays, 12/15, p.21
Steel imports off, but final score not in yet due to dock strike, 8/11, p.29
Time to bone up on recession homework, 7/14, p.25
U. S. Maritime future: Need decisions soon: Helen Bentley, interviewed, 8/25, p.22
Water pollution hearings, Interior Dept., escalate: Cleveland steelmakers face charges, 9/29, p.33
What are tomorrow's managers thinking today? 7/7, p.37

Inflation: See Business (Economy)

Inspection, Testing:
Computer engine testing at White Motor, 9/8, p.36
Copperweld's Magnaglo inspection of blooms and billets, 12/15, p.30
Electron microscope, France, soon to operate, 7/7, p.25
Immersion ultrasonic testing techniques determine condition of underwater steel piling, 12/29, p.16
Infrared devices for measuring temp.s, industry growth, 7/7, p.25
Liquid crystals show color image of ultrasonic waves, detects flaws, 10/6, p.49
Malfunctions diagnosed by analysis of sounds emitted by jet engine, 12/29, p.16
Plastic-aluminum powder cuts time required to test scale models, 12/29, p.16
Surface analyzer for metals, NASA, 7/14, p.21
Ultrasonic inspection technique at Allegheny Ludlum: Storage oscilloscope plots cleanliness of stainless steel billets, 8/18, p.48
Ultrasonic test of residual stresses, 8/18, p.19
Ultrasonic transducers for checking steel plates, 11/3, p.18
Ultrasonics find wide job range, symposium speaker, 9/29, p.27
X-ray analyzer finds element's quantity, 12/8, p.71
X-ray unit checks fast-moving sheet, 12/8, p.61

Instruments & Controls:
Fluidic relay needs no interface, latest air duct control on fans, 9/8, p.14
Timing controls more sophisticated, 10/6, p.56

International Iron & Steel Institute:
Meeting in Tokyo: Speakers report booming market breeds brotherhood, 10/20, p.11

International Lead Zinc Research Organization:
ILZRO is name of a new zinc base foundry alloy, 7/7, p.88*

Inventories:
Components, 2nd quarter, 8/4, p.7
Components, 3rd quarter, 11/3, p.56
Inventories higher, survey of Chicago bank, 12/8, p.25
Steel mill products, 12/15, p.48

Inventors:
Independent inventors whet big firm appetites, 10/20, p.22

Inventory Control:
Steel service centers: Inventories have to be managed, 9/8, p.34

Iron Ore:
African iron ore venture planned (Valco), 7/28, p.16
Canadian iron ore strike—peace starts mills scrambling, 8/15, p.15
Great Lakes ore fleet races to beat iron ore pinch, 12/15, p.38
Iron ore pelletmakers squeezed for capacity (North American producers), 9/22, p.28
Metallized pellets of high iron content forecast, 10/27, p.21
System loads, discharges slurried iron ore concentrates, ocean transport in tankers, 8/4, p.19

J

Japan:
Aluminum smelters expanded, 12/22, p.15
Automaker (Nissan) to use automatic transmissions in Datsun line, 10/6, p.29
Electronic equipment growth, EIA report, 9/15, p.81
Investment opportunities in Japan, nontariff barriers may be removed, 10/13, p.42
Mitsubishi Chemical gets coke plant, 8/11, p.27
Nippon Kokan boosts capacity, 7/7, p.29
Plant and equipment spending up, 10/20, p.16
Steelmakers get orders from Red China, 7/14, p.21
Steel mills use walking beam concept for reheating furnaces, 7/14, p.19
Toyota ups lift truck output, 11/17, p.29
Trade talks with U. S. to start, 9/22, p.11
Yawata-Fuji merger eyed by steelmen: Inayama is new president, 11/10, p.15
Yawata and Fuji merger, labor group suit no block, 12/1, p.15

Job Bank Program:
Job bank services to be coordinated in 55 cities, list of jobs available, 11/10, p.52

Jobs:
Considering changing jobs? Move up, not out, 12/1, p.13
Hard-core hiring easier with JOBS '70 program, 10/6, p.19
How to find a better job, 7/14, p.34
JOBS is upgraded, 11/24, p.22

John Carroll University:
Associate in Professional Management (APM) class: Three Rs ain't enough, 8/18, p.36

Joining:
Adhesives for cryogenics, Lewis Research, 7/14, p.22
Hot melt adhesives and coatings, 7/7, p.57

L

Labor:
1970—tough labor year coming up, major contracts expiring, 12/1, p.17
AFL-CIO pushing pension bills, 12/22, p.12
AFL-CIO strike fund in GE battle, 12/1, p.13
ALA (Alliance for Labor Action), will glass workers join, 9/15, p.23
ALA sets sights on Atlanta, 10/13, p.22
Canada—labor costs closer to U. S. level, 11/10, p.19
Contract settlements analysis, 2nd quarter, BNA, 7/28, p.13
Fringe benefits soar: Speaker at American Compensation Assn. meeting, 11/10, p.31
IUE-GE: Electrical talks test bargaining techniques, 11/24, p.30
IUE-GE: Suppliers and customers may feel impact, 11/3, p.15
IUE-GE: Time's running out for electrical talks (industry trendline), 9/22, p.18
IUE-GE delay negotiations, 7/7, p.21; 7/21, p.16
IUE-GE spar; time running out, 9/15, p.19
IUE-GE start talks, 8/11, p.21
IUE-GE talks, last-minute crisis bargaining is outlook, 8/18, p.15
IUE and UE resist GE's hedge, 10/13, p.17
IAM lays groundwork for '71, push to build up ranks, 12/8, p.21
Labor contracts expiring in 1970 (industry - employees covered), 12/1, p.17
Labor contracts, median wage gain drops, BNA report, 11/10, p.17
Labor law reform pushed by NAM panelists, 12/15, p.16
Labor union membership, total U. S., 11/17, p.25
NLRB findings on case involving Phelps Dodge and the AFL-CIO committee stemming from copper strike, 8/11, p.19
Rubber workers drafting demands (AFL-CIO), 12/15, p.15
Strikes by in-plant railroad works may hit many steel plants, 9/15, p.19
Time loss due to strikes forecast in '70 by FMCS speaker, 10/27, p.17
UAW-American Motors gear for talks, 8/11, p.31
UAW benefits at end-of-year shutdowns, 12/22, p.12
UAW boosts strike fund, benefits up, special convention in Detroit, 11/17, p.21
UAW—Productivity wins key role in 1970 auto labor talks, 7/7, p.39
UAW sets its bargaining sights: St. Louis member discusses upcoming negotiation with Big Three, 12/8, p.11
UAW strike tab: $32 million a week, 12/22, p.14
UMWA—coal contract talks in '71, mine workers in explosive mood, 12/8, p.19
UMWA election, charge rigging, 12/22, p.11
UMWA faces presidential contest, 8/18, p.17
USA members get adjustment pay assistance from Labor Dept., jobs lost due to increased imports, 12/15, p.15
USWA administrative posts sought by blacks, 10/6, p.21
USWA: Incentive coverage plan, 8/11, p.19
USWA incentive hassle is over, but just beginning, 9/8, p.20
USWA: Incentive pay issue, arbitration panel headed by Simkin, 7/7, p.19
USWA incentives still goal, 9/22, p.11
USWA industry conference concept spreads, 9/22, p.12
USWA nearer guaranteed wage, 8/18, p.15
USWA pacts—more industry conferences, 8/25, p.16
USWA sued by Wheeling-Pittsburgh in Ohio, 8/11, p.21
UTU (United Transportation Union) negotiate with captive railroads of steel firms, 11/17, p.19
Whitecollars next challenge: McDonald pinpoints in new book, *Union Man*, 8/25, p.17
Whitecollar workers, why they go union, 11/3, p.15

Land Development:
Manufacturers jump on real estate bandwagon, 11/3, p.21

Languages:
Foreign language is demand for American Businessmen, Schardl report, 11/24, p.52b*

Lasers:
Laser measures rod diameter, 11/24, p.23
Low cost lasers span spectrum, 8/11, p.26

Latin America:
Article on Latin America . . . myths, markets, musts, 10/20, p.38

Lead Industries Assn.:
Manpower lack hurts output, 7/21, p.17
Fleet car buying and leasing, trend to smaller cars, 9/29, p.23

Leisure:
Are we ready for the 'good life'? 11/17, p.48
Playtime for U. S. means work for leisure firms, market report, 11/17, p.80
Recreation good sales, Predicasts, 12/8, p.23

Lewis Research Center:
Computer aids supersonic jet engine systems, 9/22, p.13

Liability:
Product liability lawsuits to increase, 7/21, p.19

Licensing:
Firms turning away from licensing of U. S.-owned patents, trademarks, 7/28, p.13

Lubricants, Lubrication:
Combination of Teflon and fiber glass, lube for roller bearings, Russian researcher, 11/10, p.23

M

MIS: See Management Systems

Machine Tool Industry:
1970 machine tool show, may dampen sales, 11/17, p.23
AMTDA comments on machine tool drop, new and used, 9/29, p.19
AMTDA urges uniform depreciation rates, 7/14, p.17
DoD stand on government-owned tools? 9/15, p.21
DoD tool disposal still controversial, 10/20, p.12
NMTBA: 2nd half orders, 7/28, p.11
NTDPMA: Concern shown over imports, 12/29, p.44
NTDPMA: Zeidler reports Washington hearings, 7/28, p.40
Used tool dealers study economy, DoD disposal, 12/22, p.48
Used tools, industry report, 7/14, p.60
Used tools, sales drop in November, 12/29, p.13
Vermont has disproportionately large segment of machine tool industry, 10/6, p.23

Machine Tools & Attachments:
Hydraulic clamper on turret drill, 10/20, p.40
Hydraulic tracer (Kiro-Matic), Whittaker cuts aircraft fittings from stainless, 7/7, p.55
Pegboard programming lathe or milling machine, 8/4, p.20
Transfer line diagnoses own problems, Barnes Co., 8/18, p.20

Machinery:
In machinery, good looks is a byproduct: Stubbs, industrial designer, 7/21, p.42* and 7/28, p.30†

Machinery & Allied Products Institute:
Terborgh study on inflation, 7/21, p.15

Machinery Dealers National Assn.:
Studley: Used tools forecast, 7/14, p.60
Used machine tool industry report, 12/22, p.48
Used tools, November report, 12/29, p.13

Machining:
Auto cylinder block boring mills—feature change in cutting tools, bearings, 9/8, p.64c
Automakers block boring lines feature hydrostatic spindle bearings, 9/8, p.64c
Match grinding process for large positioning tables, 7/7, p.80e*
Rotary positioning readout system faster with ICs, 9/29, p.64d*

Magnets:
Chrysler (Amplex) makes ceramic magnets for small electric motors and loudspeakers: Magnet market attracts big effort by Amplex, 8/11, p.53† and 9/15, p.58c*
Magnetic bubbles base of new switching technology, 8/18, p.17

Code: *—*Metalworking Edition only;* †—*Metalproducing Edition only;* IE—*Industrial Equipment*

Maintenance:
Maintenance men need info to battle costs: Bruening (Bearings Inc.) offers tips, 7/7, p.39

Management:
Associate in Professional Management class at John Carroll (students are professional managers): Three Rs ain't enough, 8/18, p.36
Be a good manager—what it takes, 7/14, p.33
Beat a broad path to the executive suite—getting to the top, Kearney's Schiller report, 8/11, p.76b*
Chief executive and job: NICB survey, 9/29, p.23
Copperweld's Ohio Steel Tube: Right decisions raise production, 7/7, p.63
Crash programs need to be minimized, lead to indifference, 11/3, p.45
Divorced executives, hiring bias ends, 11/3, p.18
Engineering manager, ability is key to success, 10/20, p.12
Executive business lunch part of corporate strategy, 10/13, p.19
Executive demand up, supply down, Heidrick & Struggles, 7/21, p.18
Executive salaries advance, surveys of Maichle & Wytmar, and McKinsey, 11/24, p.29
Executive titles changing, Battalia survey, 12/8, p.66
Executives take technical education course at Polytechnic Inst., 9/29, p.41
Executives working harder than ever, survey shows, 12/8, p.66
Harvard Business School survey—salaries for managers: What are tomorrow's managers thinking today? 7/7, p.37
Hiring: Minimizing the risk, 7/28, p.27
Management of change looms ahead: Xerox's Hay speaks on employee communications, flow of ideas, 12/15, p.35
Manager of the '70s: George Odiorne, 8/25, p.38
Managers sample the compensation cafeteria, 10/6, p.58
Middle managers aided by memos from aides, 10/27, p.19
Multinational managers need culture studies, Italian speaker, 10/6, p.44f*
Passed-over managers, solutions to problem of the 'forgotten manager,' 9/15, p.76
Staff club at Giddings & Lewis, meet you at the club means party with a purpose, 8/25, p.45*
Technology in coming decade to mold managers role, 11/10, p.17
Top management promotions, mobility as seniority loses ground, 10/27, p.17
Wife—valuable company resource, 8/11, p.23

Management Consultant:
Barry: How to find a better job, 7/14, p.34

Management Systems:
Aerospace ponder CAD and CAM computers, 9/29, p.27
CAD and CAM: Logjams block computerized production, 12/15, p.36
CAPPS (corporate accounts payable purchasing), storeroom reports and order activity, 12/1, p.40
MIS (management information system): Ziegler of Turn Key, addresses BEMA symposium, 11/10, p.40
PERT plotting automated by VISTA, 11/10, p.21

Managing for Productivity:
5. How to groom upcomers, 3-S case, 8/4, p.27; and how to bring the board of directors up to date, 10/20, p.37
6. How to use management tools (behavior science), Constant Conveyors case, 9/15, p.66; 11/24, p.45
7. How to turn yourself on (ConOx Corp.), 10/20, p.30; a plan to turn yourself on again, 12/1, p.42
8. How to cash in on new technology, Your Company case, 12/8, p.52
Contest winner, Space Controls case, 9/15, p.78
Contest winner, Wallco case, 8/11, p.51

Manpower:
Survey indicates "mod" dress and grooming unacceptable while job hunting, 12/29, p.14

Maritime Industry:
U. S. Maritime future, decisions needed: Helen Bentley interview, 8/25, p.22

Marketing:
NICB conference: Marketing—holds key to change in '70s, 11/10, p.30

Material Handling Equipment:
Conveyor system handles chopped side scrap from pickling line, made simple, 9/22, p.36

Materials:
No material is forever—technology changes, 11/24, p.47

Materials Engineering Congress & Exposition:
Materials key to automotive future, speaker reports, 10/27, p.32d*

Melting:
Cupola melting costs down, Runge Foundry Cost Systems study, 7/14, p.22
Electron beam melting for recovering zirconium from scrap, German process, 8/11, p.27
Electroslag remelting: Billion dollar process by '75 predicts Dr. Bhat, Mellon Inst., 9/29, p.25
Hot melts gain grip on new jobs (adhesives and coatings), report of Fuller Co.'s Schubert, 7/7, p.57
Nonconsumable electrode (Duarc) at Westinghouse can cut vacuum melting costs, 7/7, p.80d*
Plasma torch adds flexibility to electroslag remelt process, England, 9/8, p.14
Vacuum induction melting, Universal-Cyclops, 7/21, p.39

Mergers:
Accounting procedure changes may be growth barrier of conglomerates, 11/17, p.23
Conglomerate managers avoid established ways; Dean (law firm), 10/27, p.31
Corporate mergers, spin-offs up in '69, 11/17, p.17
Justice Dept. focuses merger hostility, no de-escalation, 7/21, p.16
Restrictions fail to slow mergers, activity in first half, 7/14, p.17

Metal Cleaning:
Dow's vapor degreasing solvent used on Boeing 747 engine, Rohr Corp., 12/15, p.40b*

Metal Deposition:
Dow technique for electroless deposition of aluminum, 10/6, p.25
Electroless deposition, magnetic films, 7/7, p.27

Metal Heat Treaters:
People shortage shapes changes, 11/24, p.68

Metal Powder Industries Federation:
Helsel new president, industry outlook report, 8/18, p.21
Meeting speaker: Overcapacity a good thing? 9/29, p.21
Metal powder shipments, 11/17, p.41

Metal Selector:
1970 edition announced, 9/29, p.48

Metallurgy:
An answer to why metals fail sought by scientists, 7/28, p.14
How hydrogen embrittles, Argonne Lab report, 7/7, p.25
Superplasticity enchants metallurgy, 12/15, p.25

Metals Identification:
SAE studies ID system, 10/20, p.13

Metalworking:
1st half profits, 8/11, p.7
3rd quarter profits, 11/3, p.7

Metalworking Trendlines: See Industry Trendlines

Metric Measurements:
Questionnaires to help evaluate metric move, NBS to distribute, 10/27, p.32

Michigan State University:
Prof. Jennings: Study of solutions for 'passed-over manager,' 9/15, p.76

Microencapsulation:
STEEL Feature: Microencapsulation takes the wrap, 11/10, p.34

Mines:
Nicaraguan firm developing lead-zinc mine, 12/29, p.17
Union Carbide develops Congo mine, columbium ore body, 7/14, p.21

Minnesota:
'Instant' city being planned, 7/28, p.12

Molding Machines:
Rotating molds turn out plastic toys, furniture, Krauss-Maffei Corp., 9/29, p.40a*

Molybdenum:
High purity molybdenum and rhenium recovery, 8/4, p.19

Money:
Motivate with money for bluecollar worker (Fein, management consultant), 7/28, p.14
See also Business (Economy)

Motivation:
Money best motivator for blue collar worker (management consultant), 7/28, p.14
Motivating lower level employees: Speaker, 11/17, p.21

Motors, Generators:
Superconducting generator produces alternating current proposed (England), 7/21, p.20

Multinational Firms:
Trigg (Alcan) reports multinational firms good for economies, 10/6, p.60d*

N

National Academy of Sciences:
Technology 'constellation' is needed, 9/8, p.12

National Aeronautics & Space Administration:
Business fails to use technological information indexed by NASA: Oulie, Western Research Application Center, 11/3, p.24
Lewis Research—surface analyzer defines metals, 7/14, p.21
Manufacturing in outer space? Industries invited to participate in orbital manufacturing technology, 7/28, p.17
See also Lewis Research Center

National Assn. of Business Economists:
Economist Stein's (President's Council) address: If economy trips, will it fall? 10/6, p.7

National Assn. of Manufacturers:
Continues tax reform battle, 12/15, p.15
Panelists push for labor law reform, 12/15, p.16

National Assn. of Purchasing Management Inc.:
Fall order improvement not to be counted on, 11/10, p.15
Price at time of order for steel buyers, 7/21, p.16
Steel pricing trend, 1970, 11/24, p.20
Steel usage, 2nd half, 9/8, p.11

National Bureau of Standards:
Researchers designed a heat pipe oven to aid in spectroscopic studies, 7/14, p. 44b*

National Fluid Power Assn.:
Fluid power sales, new highs, 7/7, p.95

National Foreign Trade Council:
Sec'y Stans speaker: U. S. inflation hinders foreign trade, 12/1, p.11

National Industrial Conference Board:
1970 forecast at annual marketing conference, 11/3, p.13
Advertising index drop, 7/7, p.25
Chief executive profiled, 9/29, p.23
Consumer buying cutback, 12/1, p.11
Consumer spending plans not drastically cut, 8/11, p.23
Economic interdependence is trend among nations, report of survey of business leaders from 50 Free World countries, 10/6, p.60b*
Electric power grows, survey, 9/8, p.12
Licensing of U. S.-owned patents, trademarks and know-how losing appeal, 7/28, p.13
Meeting speaker: People praying for a recession, 10/13, p.54
Overseas managers paid (hardship rates), 8/11, p.27
Surveys financial executives: High interest rates, expensive borrowing, 8/4, p.18
Technical manpower needs boost, 11/24, p.23

National Industrial Distributors Assn.:
Survey: Small manufacturers carry industrial load, 9/8, p.64d

National Screw Machine Products Assn.:
Small shops find training pays, 12/15, p.21

National Tool, Die & Precision Machining Assn.:
Business prospects brighter, meeting report, 11/24, p.46
To battle foreign work, 11/10, p.19
Zeidler reports Washington hearings, 7/28, p.40

Negroes:
Black capitalism . . . Last frontier of civil rights, 12/22, p.24
Blacks after USWA posts, 10/6, p.21
Brimmer (FRS): Minorities should be in economic mainstream, 9/8, p.13

Neutrons:
GE uses neutrons instead of x-ray for special problems, 10/27, p.23
Neutrons ease search for mineral deposits, Netherlands, 10/27, p.23

New Products & Development:
Routes vary for launching new products, 11/17, p.64a*

Nickel:
After strike, USA-Inco: Nickel forecast—cloudy 'til spring, 11/24, p.19
Facing another nickel ante . . . users study their hands, production-supply, 10/27, p.29
Government release of 'excess' nickel, 11/17, p.21
GSA releases stockpiled nickel, 12/22, p.11
Nickel—more supply, more substitutes, 10/13, p.17
Nickel strike may lead to rationing, 8/4, p.56
Price hikes, 12/1, p.12
Producers not laggard in striving to meet demands, 11/17, p.61

Nickel Industry:
Canadian strike intensifies shortages, 7/28, p.12
Contract talks with USW, money is issue, 8/18, p.17

Nitriding:
Low alloy steels corrosion resistant by nitriding, 8/4, p.17

Nuclear: See Atomic Energy

Numerical Controls:
Adaptive control: Systems are 'go,' but sales are slow, 8/11, p.45
Adaptive control for rolling mill, Westinghouse's Hagan/Computer Systems Div., 12/8, p.27
Adaptive controls, debugging completed, 10/13, p.19
F-14 slug riveter controlled by computer NC tape, 12/22, p.13
NC machining improves product design, Bettis Corp., 9/29, p.64d*
Olivetti NC invades the wolf's den: U. S. operations, 8/25, p.37

Tracer control at Whittaker, Kiro-Matic hydraulic tracer, 7/7, p.55

O

Oceans:
Lockheed sees tapping ocean resources a must, 10/27, p.32
Offshore oil storage in huge bottomless tank, 8/25, p.19

Odiorne, George S.:
Manager of the seventies outlined, 8/25, p.38

Ohio University:
Dr. Fontana urges more assistance for university research, 10/6, p.25

Oil Industry:
Alaskan oil, tankers scheduled for shipment, 8/18, p.17
Alaska's North Slope oil boom shifts investment in petrochemical industry northward, 9/29, p.19
Boat recovers spilled oil from water surface, 10/20, p.14
Bottomless tank stores oil on ocean floor, 8/25, p.19
Oil quota removal bad for national interest, 12/15, p.15
Use of nuclear powered submarine tankers to haul Alaskan oil proposed by General Dynamics, 12/29, p.15
World petroleum business: Martin (Middle East and African Affairs), 10/20, p.36† and 11/3, p.52a*

Oscilloscope: See Inspection, Testing

Overseas: See Foreign

P

Packaging, Containers:
1970 predictions for packaging industry, 11/10, p.53
Air protects fragile parts, cushion type bags, 12/15, p.40
Microencapsulation, wrappings, 11/10, p.34
Packaging lines changing rapidly, changes machinery, 12/1, p.28a*
Packaging waste—challenge or chance? STEEL Feature, 10/27, p.33
Packaging waste: Profit or loss (Barkley & Dexter president reports), 11/3, p.18
Standardized packaging, Allis-Chalmers: Container standards box in costs, 9/15, p.73

Paint: See Finishes, Coatings, Paint

Paint Research Station (England):
Electric conducting paint, 7/21, p.20

Panel Seminars:
TRW puts tech spike into managers' punch, seminar participants come from various levels, 12/1, p.34

Patents:
Kearney & Trecker tool changer patent found valid by district court judge, 12/8, p.21

Pelletmakers: See Iron Ore

Petroleum Industry:
Martin (Middle East and African Affairs): Necessity negates nationalism in world petroleum business, 10/20, p.36† and 11/3, p.52a*

Petroleum Seminar:
Speaker, Geneva: Billions needed for oil, 9/20, p.21

Pickling:
Acid handling simplified by graphite system, 12/22, p.35
Pickling firm solves pollution problem with new system of acid recovery, 12/8, p.88g*

Pipe, Tubing Fittings:
Galvanized steel pipe couplings to replace copper at U. S. Steel, 7/7, p.80c*

Pipelines:
Dept. of Transportation study: Transporting solids (garbage to remote sites, coal from Ariz. mine to Nevada power plant), 11/3, p.19

Plant Relocation:
Industry moves to suburbia (Schaumburg, Ill.), 11/3, p.43

Plastics:
Foamed plastic products, joint venture by High Voltage and Japanese firm, 9/29, p.25
Plastic-aluminum powder combination simulates metals, 12/29, p.16
Pyrrone polymers dev. at NASA, 8/25, p.17
Sheets of irradiated plastic foam versatile, jointly produced by U. S. and Japanese firms, 9/8, p.14
See also Automotive (use)

Plate Process:
Less nickel needed with an Alloy C plating process, 11/17, p.27

Poland:
Orders presses from U. S., 8/18, p.21

Pollution:
Abatement through development of magnetohydrodynamics system, 12/29, p.13
Air and water pollution fight intensified: AISI survey, 8/25, p.16
Ford Motor's program to minimize air pollution, 12/29, p.7
Ohio hearings on enforcement, who has jurisdiction? 10/27, p.43
Rust Eng. studies utilitylike facilities to supply environmental control and antipollution needs, 9/8, p.11
States tax incentive picture for pollution control action, 10/27, p.38

Polytechnic Institute:
Executives take 'live-in' technical development program, 9/29, p.41

Powder Metallurgy:
Article (STEEL Feature): P/M shoots for the big time, 11/17, p.41
Crushed diamonds team with metal powders to make precision cut-off wheels, 7/28, p.14
Depositing powder uniformly on face of a moving strip of metal, grooved rotating roll, 9/22, p.14
Fluidized bed coating, cut rejects, 7/21, p.43
Weak powders (thermochemical process) polish better, Russian metallurgist, 7/28, p.14

Pressing:
Isostatic pressing studied by Ford, Autoclave Engineers jointly, 7/21, p.20

Pressure Vessels:
Isostatic pressure cylinder takes shape, Midvale-Heppenstall forging press, 8/25, p.32
Laminated steel replaces solid steel structure, 8/11, p.25

Prices:
Aluminum hikes expected to continue, 11/24, p.21

Pricing:
Flat rolled products: Sell by square foot rather than by pound for savings, 11/17, p.19
New sheet pricing spreads but with modifications, 12/8, p.109

Product Liability: See Liability

Product Safety:
Entrusted to government agency rather than private groups: Letters between McLaren (Antitrust) and Elkind (Product Safety Commission), 7/28, p.11
Government standards may be forthcoming: Pertshuk tells NEMA, 12/1, p.43
Virginia Knauer, Consumer Affairs, tough on product safety, 9/15, p.79

Productivity:
Training—try togetherness: Managers find it promotes productivity, 7/21, p.27

Purchasing:
Corporate purchasing pits savings against autonomy, 12/1, p.39

Purchasing Management Assn. of Chicago:
Profits and prices in '70, survey, 10/27, p.19
Survey: Executives oppose price controls, 12/8, p.25

Q

Quenching:
Quenching oils improved by petroleum-derived resins, Britain, 9/29, p.27

R

Radiation Curing:
Instant curing nears production, electron guns cure metal coatings, 7/21, p.32

Radio, TV:
TV scans scrap belt conveyor at Ford stamping plant, 10/6, p.60e*

Railroads:
1970s: Railroaders' talk bleak, problems dot horizon, 12/8, p.77
Articulated hopper car could lighten load, coal, 7/28, p.19
Auto-Trans, moving family car by rail, 10/13, p.23
Contract disputes involve three Pittsburgh roads, 10/6, p.21
Freight car shortage studied, 10/6, p.21
Freight rate boost in '70? 12/15, p.14
Freight rate increase on shipments of home electronic items challenged by EIA, 9/15, p.21
High speed trains need linear induction motors (LIM), 10/6, p.27
Intermodal terminal system to speed freight, 7/14, p.68b*
Jumbo jet wings transport in carriers, 12/8, p.27
Rail rate low to encourage intermodal containerized cargo, 11/3, p.15
Railroad head (MacDonald, Interlake) sees steel, packaging bright in '70: Illinois Chamber of Commerce meeting, 11/10, p.53

Real Estate:
Industry moves to suburbia, 11/3, p.43
Manufacturers jump on real estate bandwagon, Industry Trendline, 11/3, p.21

Recession: See Business (Economy)

Reciprocity:
Attorney lists don'ts to watch for in trade relations, antitrusts, 10/27, p.32d*

Reclamation:
Manganese recovered from low grade manganese carbonates, Hungarian engineer, 11/10, p.23
Reclaiming strip mined lands a new science, 10/6, p.60a*

Recreation Goods: See Leisure

Refrigeration Equipment:
Grumman uses sunken refrigerator for fast processing of aluminum sheets, 11/17, p.64e*

Research & Development:
Basic research to multiply, 1st Nat'l Bank of Chicago report, 8/4, p.17
Battelle forecasts U. S. R&D spending, 7/14, p.17
Commercial use of U. S. R&D urged by Steigerwald, 8/11, p.25
More assistance for university research urged, 10/6, p.25

Rod Mills:
Walking beam furnace at Atlantic Steel steps up rod production, 8/4, p.39

Russia:
Atom fusion power, Doughnut shaped device called T-3, 9/8, p.12
Buys U. S. flat rolled steel, 7/14, p.19
Electroslag refining furnace built for Pittsburgh firm, 10/6, p.25
Enters tractor venture, Indian firm, 9/22, p.16
Firms bid for foundry plant contract, 8/18, p.21
Inorganic polyphosphate binder for fiberglass, 7/7, p.27
Metallurgists report improved wear and corrosion resistance for metals by surface impregnation with halides, 7/14, p.22
Soviets distort world steel demand, 12/1, p.12
Volkswagenwerk (German) may sell used tools to Russia, 12/15, p.17

S

Salaries:
Inflation and executive compensation: Findings confirm your wife's right about the budget, 11/24, p.29
Managers sample the compensation cafeteria approach to pay, 10/6, p.58
Whitecollar salaries increase, Labor Dept. report, 12/22, p.13

Sales Meetings:
Decline in quality of sales meetings, speaker, 9/15, p.23
How to wake up the wake: Daniels (Garrett Co.) and Butts (Butts & Ordway), 10/27, p.46

Sales Programs:
Alcoa exhibit on wheels, coast to coast tour, 12/8, p.61

Scrap:
Article: There's a future for scrap (in raw materials race), 12/1, p.29
Auto scrap shredder installed at Oakland, Calif., 11/10, p.76
Auto shredding installations noted, 12/22, p.56
Autos abandoned, scrapmen advance plan to move derilicts, 9/8, p.64
Export scrap cargo loaded at Duluth for Jap ports, 12/22, p.56

Scrap Iron & Steel Inc.:
Story: Scrap use rises with electric steelmaking, 10/27, p.72

Service Centers:
Computer consultants aim at service centers, 9/22, p.35

Sheet & Strip:
Aluminum sheets put in sunken refrigerator at Grumman, time saver, 11/17, p.64b*
Composite strip rolls up savings for auto trim, 7/7, p.88f*
Rolling process produces slick strip at Waterbury, 7/28, p.14

Shipping:
Container leasing pools, 9/29, p.40d*
Containers key to New York port, 8/18, p.20
Pittsburgh district steel firms shipping steel by barge to seaport during winter weather, 12/29, p.13

Ships, Shipbuilding:
1970 forecast for shipbuilding revenue up, 12/29, p.15
Computers used in building Humble supertankers, 9/15, p.80d*
Great Lakes ore fleet races to beat pinch, threat of iron ore shortage: Pictured, *Philip R. Clarke*, flagship of U. S. Steel, 12/15, p.38
Nixon Maritime program, subsidies in shipbuilding, 11/3, p.15
Nuclear powered submarine tankers to haul Alaskan oil, 12/29, p.15
Oil discoveries may spur shipbuilding, 8/4, p.15
Oil from Alaska, supertanker plans unproven, 9/22, p.13
Removable holds to allow shortened ships to operate in salt water during winter and Great Lakes in warm weather, 10/13, p.23
Sun Shipbuilding president (Atkinson) reports shipbuilding, 11/3, p.32

Shop Steward:
How to get along with a union shop steward, AAIM tips, 8/4, p.41

Shredders: See Scrap

Sloan School of Management:
Firms form venture capital groups to keep risk takers, 11/17, p.27

Small Firms:
Small manufacturers carry industrial load, NIDA survey, 9/8, p.64d
The trouble with being small (fear of conglomerate mania), how to expand profitably, 11/3, p.41

Small Shops:
Small shops find training pays, Industry Trendlines, 12/15, p.21

Smelters, Refineries:
Alcoa boosts capacity in Australian refinery, 7/28, p.16; 12/1, p.16
Aluminum smelter for New Zealand, Jap and Aussie firms, 7/7, p.29
Ghana smelter capacity boosted (Voita Aluminium), 7/14, p.21
Zone refining used to produce ultrapure aluminum in form of wire and pellets for vapor deposition, 8/4, p.20

Social Problems:
1970: Social conditions challenge business, 12/8, p.43
Aerospace experts must take social initiative; Myron Tribus, asst. sec'y, Commerce, 12/8, p.88c*
Corporate citizenship needed: Keeler (NAM) report, 12/15, p.17
Industry moving slowly in adopting social conscience, report of Lederer Jr., Rand Corp., 12/8, p.88g*
Solutions via profit power: Dow's Doan, 12/15, p.40

Space Controls Case: See Managing for Productivity

Space Materials & Developments:
Man on moon—will it be anticlimactic? 7/14, p.21
Manufacturing in outer space (article), 7/28, p.17
Rocket motor for AF Minuteman ICBM is doughnut sized, 11/17, p.29

Stainless Steel:
Auto trim of composite stainless strip, 1971 models, 7/7, p.88f*

Stampers:
1970 market forecast: Keith, AMSA, 12/1, p.52

Stamping:
TV stops press action, 12/22, p.34

Standard Industrial Classification:
Revision of S.I.C. system, 9/8, p.12

Standards:
Container standards box in costs, Allis-Chalmers, 9/15, p.73
Standardization may aid competition: Justice Dept. speaker, 12/15, p.16

Stanford Research Institute:
Johnson cites piggybacking, containerization reducing field warehousing, 9/29, p.27

STEEL Features:
Aerospace industry looks the earth over, new market areas, 9/22, p.21
Black capitalism . . . Last frontier of civil rights, 12/22, p.24
Canadian steel—North Country steelmen maintain momentum, 9/8, p.29
Change . . . The Only Sure Thing, by William M. Rooney, 12/29, p.22
Electric motors—picking right motor gets tougher, 10/13, p.37
Forging industry—push to automation, 7/14, p.29
Gearmakers go chipless, new production methods, 8/18, p.31
Housing crunch: Will private enterprise keep pace? 9/29, p.43
Microencapsulation takes the wrap, 11/10, p.34
Packaging waste: Challenge or chance? 10/27, p.33
P/M shoots for the big time, 11/17, p.41
Shooting for better distribution, getting goods to market, 8/11, p.37
STEEL's panel of economic consultants sees—no great leaps, but looser chains, 10/6, p.45
Steelmaking in the—decade of the squeeze, 11/24, p.33
Sun Ship's not afraid to make waves, 11/3, p.32
Superplasticity enchants metallurgy, 12/15, p.25
Tax reform—what's at the end of the rainbow? 8/25, p.27
There's a future for scrap in raw materials race, 12/1, p.29
Titanium tackles the '70s, 7/28, p.21
Try togetherness in training, 7/21, p.27
We need better building codes (Romney), 7/7, p.41

Steel Imports: See Foreign Competition

Steel Industry:
1970 steelmaking—decade of the squeeze (STEEL Feature), 11/24, p.33
Analyst (Kilbert) advises steelmen: Develop new markets (long range steel production by process-chart), 11/10, p.38
Arbitration panel (three man): Issue incentive pay, 7/7, p. 19
BOF steel wins more ASTM specs, 9/8, p.14
Consumption in U. S. to drop, forecast of Kindler (Wheeling-Pittsburgh), 10/27, p.17
Kaiser Engineers report: BOF growth in U. S., production capacity, 11/10, p.19
Kaiser Engineers report: L-D BOFs installed (firms), 7/7, p.27
Price at time of order, longer leadtimes, 7/21, p.16
Profits, earnings, 3rd quarter, 11/3, p.17
Profits tumble 30% (18 firms), 8/4, p.15
Steel usage, 2nd half, PAs survey, 9/8, p.11
West Coast imports rise, Kaiser report, 12/15, p.15

Steelmaking:
1970s: Steelmaking in the—decade of the squeeze, 11/24, p.33
ASEA process used in Sweden and Japan: Chrome-bearing steel savings, 12/1, p.14
BISRA: Radar altimeter checks blast furnace level, 8/11, p.26
BOFs, production capacity in U. S. (Kaiser Engineers report), 11/10, p.19
Electric furnace fed with pellets, 11/17, p.25
Electric furnaces larger, new trend, 10/20, p.14
Electric furnaces to use more scrap, eases car graveyard problem, 12/8, p.80
Electric steelmaking, scrap use rises, 10/27, p.72
Electroslag process for high alloy steels, Aztec Metals, 7/7, p.27
Plasma torch adds flexibility to electroslag remelt process, England, 9/8, p.14
Vacuum technology splits steelmaking process into two parts: Electric arc only for melting, ladle-furnace permits blowing of oxygen into vacuum, 8/11, p.21
Worcra process: Australia shifts continuous steelmaking into second gear, 10/20, p.41† and 10/27, p.48a*

Steel Mill Controls:
Prefab control pulpit can be plugged in on site, GE, 7/14, p.41
Walking beam furnace, one operator controls rod mill at Atlantic Steel, 8/4, p.39
Waterbury Farrel rolling mill gage control, 12/22, p.19

Steel Mill Products:
Inventory survey, 12/15, p.48
Pricing throws sheets to the wind, sold by square foot rather than by the pound, 11/17, p.19

Steel Mills:
Bulgarians buy cold roll mill; project managed by French consortium, 7/7, p.29
Modern bar mills listed, 9/29, p.57

Steel Plants:
Argentine steel complex expanded, 7/28, p.16
Strikes by in-plant railroad workers may hit many plants, 9/15, p.19

STEEL Seminar in Print: See Managing for Productivity

STEEL's Panel of Economic Consultants:
1970 forecast, 10/6, p.45

Steel Service Centers:
Inventories have to be managed, tight inventory control: Welch, 9/8, p.34

Steel Studs:
Steel studs vie for job in home building market, 8/25, p.44d*

Steel Wire Facility:
Hawaii to get steel wire products facility, 7/28, p.15

Strapping:
Chicago-based firms to add shrink film equipment, 12/1, p.28b*
Fluid logic controls new Stanley strapping machine, 10/6, p.60e*

Strip Mills:
Low speed strip mills win back favor: George Baughman, Wean United, report, 12/1, p.41

Stockrooms:
Supermarket idea cuts long waiting lines, 10/6, p.27

Stretch Forming:
How to form costly sheets with no scrap, NASA in building a solar powered system, 7/14, p.45

Structural Steel Industry:
Industry report: Fabricators hampered by manpower shortage, 8/18, p.64

Superplasticity:
Superplasticity enchants metallurgy: Prof. Backofen, MIT, 12/15, p.25

Sweden:
Merger underway, steel and metal industry, 9/8, p.16

T

Tantalum:
Canadian tantalum mine opens, 9/22, p.15

Taxes:
7% investment tax credit phaseout, chances poor; AMTBA backs Sen. Javits' phaseout proposal, 11/10, p.17
7% investment tax credit repeal is wrong medicine: Verity, Fr. Hogan, Martin, 7/28, p.13
Depreciation guidelines, reserve ratio removal? 12/15, p.14
Depreciation reform, task force studies, 10/13, p.21
IRS ruling on tax on computer software, 10/6, p.21
Income tax surcharge scheduled to end June 30, 12/22, p.11
Interstate tax bill hearings delayed, 7/14, p.17
Pay hike for you through tax reform, 11/10, p.47
Presidential task forces, progress report, 10/20, p.12
Tax concessions called by industry for pollution control, catalyst for action, 10/27, p.38
Tax reform bill, compromise may be key word, 7/28, p.12
Tax reform: What's at the end of the rainbow? STEEL Feature, 8/25, p.27
Tax reform hearings, 7% tax credit not on agenda, 8/25, p.15
Tax reform legislation has swung too far: Barlow (atty.) spokesman for trade associations before Senate hearings, 9/15, p.21
Tax reform proposals from Congress, 12/22, p.5

Technology:
Businessmen fail to use NASA indexed technological information, 11/3, p.24
Executives take technical educational course at Polytechnic, 9/29, p.41
Forecast: Where are we going? When will we get there? What will we do? 11/17, p.56
How to cash in on new technology (STEEL Seminar in Print), 12/8, p.49
No material is forever—technology changes: Milliken (Kennecott), 11/24, p.47
Review of the decade, 12/29, p.35
TRW puts tech know-how into managers' punch, 12/1, p.34

Telephones:
Picturephone, Bell System: Face-to-face phone can ease your job, 9/8, p.41

Timing Devices:
Timing's latest tick: Control, 10/6, p.56

Tin Research Institute (England):
Quick coat in water dispersion mixture, 7/28, p.14

Titanium:
Article: Titanium tackles the '70s, industry growth, 7/28, p.21
Forged titanium future good: Coyne (Wyman-Gordon), 9/15, p.25
Titanium Technology, new producer (TiTec), Prescast parts, preforms and ingots, 9/15, p.58b* and 8/11, p.52†
Welding titanium T-shapes with high frequency resistance, Battelle report, 7/7, p.80f*

Tool & Die Industry:
Business prospects look brighter, NTDPMA forecast, 11/24, p.46

Tools (Cutting):
Change in tools, bearings upgrades block boring, 9/8, p.64c
Indexable insert milling cutters, Kennametal, 9/8, p.64b

Trade Relations Assn.:
Trade relations vs. reciprocity, Kintner (Atty.) suggests list of 'don'ts', 10/27, p.32d*

Training:
Foremen trained to bridge shift-to-shift barriers, communications links, 7/14, p.44
Hardcore hiring needed by business, 7/21, p.18
Hardcore—government funded contracts (NAB), 11/3, p.17
Hardcore program at Westinghouse—how to build competence, 7/7, p.64
How business is turning dropouts into workers: United Air Lines, International Harvester, 9/22, p.20
Small shops find training pays, 12/15, p.21
State trains workers, Roanoke, Va., plant, 9/22, p.20
Try togetherness in training (STEEL Feature), 7/21, p.27
See also JOBS

Transportation:
Air cushion vehicle for intercity travel, Grumman Aerospace proposal, 9/22, p.26
Alaskan frontier, rail-highway corridor, 10/6, p.23
Closed circuit TV role in automated transit systems, 9/15, p.25
Legislation proposed for trust fund to help cities finance mass transportation systems: Wheel spinning period may end for mass transit suppliers, 7/14, p.27
Mass transit market report, Dept. of Transportation, 12/29, p.33
Mass transit, skybus concept, tax payer brings suit in Pittsburgh, 7/21, p.17
Passenger trains, high speed data, 11/10, p.21
Transit centers could add mobility: Jernstedt speaker, 11/17, p.25
Rohr contract to make cars for San Francisco transit district, 9/22, p.27
See also Railroads (freight), 7/14, p.68b*

Trucks, Trailers:
Cab interiors like home on heavy-duty vehicles, 12/1, p.15
Electronic data processing for industry, 7/14, p.9
Four wheel drive for over-the-road hauling, 7/14, p.23
Privately owned trucks to rise, 10/20, p.16
Trucktrailer unloading done by drivers with Foldfork attachment, 7/14, p.23

Tungsten:
Coating carbon fibers with tungsten, English report, 7/14, p.22

U

Ultrasonics: See Inspection

University of California:
Wife—valuable company resource, Calif. *Management Review*, 8/11, p.23

University of Chicago:
Forum speakers: '70 seen as year we pay for financial sins of '60s, 12/22, p.20

University of Michigan:
Consumer caution lowers buying plans, 10/20, p.12
Roberts points out main points in Space Controls case 'How to turn your men on', 9/15, p.78

University of Utah:
George Odiorne: The manager of the seventies outlined, 8/25, p.38

University of Wisconsin:
Pollution may pay protein profits: Marine biologists, 9/29, p.27

Urban Problems:
Attack on urban ills urged by Sarnoff (RCA), 11/24, p.20

Used Tools: See Machine Tool Industry

V

Vacations:
Vacation scheduling woes make shutdown look good, 8/18, p.29

Vacuum Melt:
Cameron markets vacuum melted extrusions, 8/25, p.44h*
Stainless vacuum process may be harbinger, 8/18, p.18
Vacuum induction melting: Now look what they're doing—at Universal-Cyclops Specialty Steel Div., 7/21, p.39

W

Wages:
Higher minimum wage may mean higher unemployment, 9/22, p.13

Wage-Prices:
Curbing wage-price spiral, hands-off policy of Nixon administration under attack, 11/17, p.23

Wallco Case: See Managing for Productivity

Warehousing, Distribution:
Computer consultants aim at service centers (Comsi Inc. report), 9/22, p.35
Field warehousing reduced due to carriers, piggybacking? 9/29, p.27

Waste Disposal:
Burning rubbish to make alcohol and building material, Sweden, 8/18, p.20
Garbage converted to gas and oil, scientists report, 11/10, p.21
Rust Engineering markets Swiss Von Roll incinerator, disposes of municipal or industrial wastes without polluting air, 7/14, p.36

Wastes:
Desalting equipment used to recover byproducts from industrial wastes, 11/17, p.27
Pickling firm solves pollution with acid recovery system, 12/8, p.88g*
Sludge study, valuable metals extracted, 8/11, p.60d

Water:
Polywater, rare, new form of water, 9/22, p.15

Water Pollution:
Chicago sues Republic and Interlake Steel, 10/13, p.21
Glass beads remove oil slicks from large water areas, 12/29, p.15
Illinois court says U. S. Steel polluting water, noxious chemicals, 9/29, p.23
Pennsylvania bill sponsored by Rep. Laudadio, 7/7, p.23
Pennsylvania: Stream-polluting acid mine drainage, an asset, 7/7, p.25
Pollution controls to get 'practical economic' look at Interior Dept.'s Washington Executives' conference, 7/14, p.17
Pollution war escalates, Interior Dept. orders hearings: Industry Trendline, 9/29, p.33
Speer (U. S. Steel) calls for industry tax relief, 11/3, p.15
States' progress, computer monitored, 10/27, p.32

Welding Industry:
Welding equipment industry shows unexpected vigor, 7/21, p.56

Welding Institute (England):
NC for semiautomatic welding, 8/18, p.19

Welding (Arc):
Backing flux on underside of weld, 10/20, p.40
Mixing argon and helium for welding cover passes improves control of wider beads, 7/21, p.21

Welding (Electron Beam):
Giant chambers handle outsize welding program, two supersized EB welders, 10/6, p.55

Welding (Electroslag):
Continuously casting thick walled tanks in spiral strips saves time, money, 12/29, p.17

Welding (Explosive):
Advantages for explosive welding differing materials, 10/27, p.21
Explosive welding can now compete, 10/20, p.14

Welding (Inertia):
Caterpillar inertia welder profits 'turn on,' 7/14, p.45

Welding (Resistance):
Composites of aluminum reinforced with boron filaments can be spotwelded, 10/13, p.23
Welding titanium T-shapes, high resistance welding, Battelle report, 7/7, p.80f*

Wire:
Refractory wire drawing refined, 8/4, p.20
Titchener's skeleton design concept: A wire chassis, 7/7, p.65

Wives: See Management

World Trade:
'One world' business overcomes nationalism, NICB report, 10/6, p.60b*
Trade barriers pose threat to world peace: David Rockefeller, 10/6, p.44f*

Wright Patterson Air Force Base:
Sponsors high frequency resistance welding of titanium T-shapes, 7/7, p.80f*

Wrought Iron Industry:
Only U. S. producer closes doors, 12/29, p.12

X

X-Rays:
Fluoroscope for X-rays, millimeter microwaves, British, 7/21, p.20
Noncontacting X-ray gaging system checks fast-moving sheets, 12/8, p.61
Portable x-ray analyzer finds element's quantity, 12/8, p.71

COMPANY INDEX

A

AMF Thermatool Inc.:
High frequency resistance welder for titanium T-shapes, 7/7, p.80f*

ASEA Electric Inc.:
Ladle-furnace, use in new vacuum steelmaking, 8/11, p.21

Acheson Colloids Co.:
Doehring views European forgemen and shop practices, 10/6, p.50
Emralon 310 polytetrafluorethylene coating cuts foundry rejects, 6/21, p.41
Lubricants prevent hot billet oxidation, IE, 7/14, p.70

Acromil Corp.:
Adaptive control on Cincinnati profiler, 8/11, p.45

Aerojet-General Corp.:
Diversifying into construction of marine vehicles, 9/22, p.22

Aerospace Corp.:
F-14 slug riveter controlled by computer, 12/22, p.13

Air Reduction Co. Inc.:
Adds wire feeder, power source, IE, 12/1, p.61

Ajax Magnethermic Corp.:
Induction heater plus fixture removes bearing, IE, 7/14, p.70

Alan Wood Steel Co.:
Acquiring Cornwells Metal Finishing, 10/13, p.21

Alcan Aluminum Corp.:
Salaried benefits steps for hourly men, 10/6, p.44d*
Trigg: Multinational firms good for everybody, 10/6, p.60d*

Allegheny Composite Corp.:
Composite strip for 1971 auto trim, new process, 7/7, p.88f*

Allegheny Ludlum Steel Corp.:
Merger with Jacobsen, 7/28, p.15
Oscilloscope plots cleanliness of stainless billet sections, an ultrasonic inspection technique developed at Research Center, 8/18, p.48
Vacuum technology splits steelmaking process into two parts, aids stainless, 8/11, p.21

Allen-Bradley Co.:
PDQ II, computer control system marketed, IE, 12/1, p.61

Allis-Chalmers Mfg. Co.:
Basic rules for company communications defined by Stewart (Farm Equipment Div.), 9/15, p.58d*
Container standards box in costs, 9/15, p.73
Enters appliance business, 10/20, p.15
Reconsiders turbogenerator field, 12/29, p.14

Aluminum Co. of America:
Approach to home building, partnership with small builders 'operation breakthrough' proposal to HUD, 12/1, p.12
Exhibit on wheels, coast to coast tour, 12/8, p.61

Amatek Inc.
Merger of Texas Flange & Mfg. Co. complete, 12/29, p.17

American Can Co.:
Packaging job included disposability, cover pic., 10/27, p.33

American Hydrotherm Corp.:
Single hot salt dilution process heats over 900 F range, chemical processing, 9/22, p.14

American Metal Climax Inc.:
Aryshire Collieries merger reapproved, 10/27, p.21
French firm (Penarroya) jointly explores nickel in New Caledonia, 9/8, p.16

American Motors Corp.:
Buys Kaiser Jeep—goes into four wheel drive, 12/15, p.9
Contract talks with UAW to start, 8/11, p.31
Increases production at Kenosha, Wis., plants, 12/29, p.16
Predicts import share of market will diminish, 12/29, p.14
Steam car research project, 12/8, p.21
To build subcompact cars now called the Gremlin, 10/13, p.22

American Viscose Div.:
Strapping system, IE, 10/13, p.84

Amforge Inc.:
Amfacts, new computer service sends cost facts to managers, 9/29, p.40a*

Ampex Corp.:
Video disc recorder, IE, 12/1, p.62

Amplex: See Chrysler

Anilam Electronics:
Rotary positioning readout system, 9/29, p.64d*

Apache Corp.:
Buys Goetti Bros. Metal, enters housing market, 11/17, p.25

Archer Products Inc.:
Third continuous strip caster, reverberatory furnace to be installed, 12/29, p.16

Argus Research Corp.:
3rd quarter survey, government spending will fit into economy, 8/25, p.7
Nakagama (economist) on wage increases and inflation, 8/18, p.28

Arlington Texas Industries:
Emralon 310 coating cuts rejects, 7/21, p.41

Armco Steel Corp.:
Australian coal venture studied, 9/8, p.13
Australian ventures, report, 9/29, p.19
Combines operations of Butler and Zanesville plant, focus on electrical steels, 12/15, p.19
Electric steels, greatest growth potential, 10/13, p.54
Expands at Sand Springs, Okla., 8/4, p.18
Keeping inflation out of capital spending budget, 10/6, p.23
Merger approved, 12/15, p.19
Merger with Hitco, 7/28, p.15 and 10/6, p.25
Nicholson pleads 'Buy American,' 8/11, p.25
Steelmaking — decade of the squeeze, 11/24, p.34
Verity sees changing steel industry, addresses bankers, 8/25, p.16

Atlantic Steel Co.:
Walking beam furnace steps up rod production, 8/4, p.39

Atomatic Mfg. Co.:
Kindling: Small firms, how to keep alive, 11/3, p.41

Austin Tool Co.:
Vibration damper ups end mill capacity, IE, 12/15, p.61

Autoclave Engineers Inc.:
Isostatic pressing, study with Ford, 7/21, p.20

AVCO Corp., Everett (Mass.) Research Lab:
Pollution abatement through development of magnetohydrodynamics system, 12/29, p.13

Avondale Shipyards Inc.:
Computers shape up Humble Oil supertankers, 9/15, p.80d*

Aztec Metals Inc.:
High alloy steels made by electroslag process, 7/7, p.27

B

Babcock & Wilcox Co.:
Barnes transfer lines diagnose their own problems, 8/18, p.20

Bailey Meter Co.:
Remote console programs computer, IE, 8/25, p.63

Barry Associates, Nathan:
Hiring: Minimizing the risk, 7/28, p.26

Bath Co., Cyril:
Stretch forming sheet metal with no scrap, building solar powered system for NASA, 7/14, p.45

Battalia, Lotz & Associates:
Survey: Executives work harder than ever, 12/8, p.66

Bearings Inc.:
Bruening offers tips on how to keep maintenance men performing at top efficiency, 7/7, p.39

Belden Corp.:
Acquires Electrical Specialty, 11/24, p.22

Bell Telephone Laboratories Inc.:
Laser with continuous wave spans spectrum, 8/11, p.26
Magnetic bubble switches, 8/18, p.17
Phone face-face can ease your job, 9/8, p.41

Bellows-Valvair:
Modular hydraulics concept dev. benefits electronic devices, printed circuit cards, 9/8, p.14
Modules make hydraulics easy to use, IE, 9/8, p.65
Richards: Far East advances in importance as a market for U. S., 9/8, p.11

Bendix Automotive & Automation Co.:
NC system, dual programming, IE, 9/15, p.129

Bendix Corp.:
Digitizer feeds graphics to counter, IE, 8/25, p.63
Electronic fuel injection, air pollution control, 11/3, p.9
Readout halves grinder positioning time, 7/28, p.51
Sputtering system-low cost scheduled, IE, 7/28, p.54

Bergman Mfg. Co.:
Precision forging titanium, 7/14, p.22

Bethlehem Steel Corp.:
Acquiring Kusan Inc., 11/10, p.24
Adds facilities at Bethlehem plant, 7/7, p.29
Adds water pollution abatement facilities, Steelton plant, 9/22, p.15
Antipollution expenditures, 10/13, p.21
Ultrasonic checking for steel plates, 11/3, p.18
X-ray gaging system checks fast-moving sheet, patent, 12/8, p.61

Bettis Corp.:
NC machining improves product design, 9/29, p.64d*

Boeing Co.:
Computer design at corporate level (CAD) for reducing operating costs, inventories, etc., 7/28, p.26
Time saving testing material used in scale models, 12/29, p.16
Titanium's growth in forgings and sheet products, 7/28, p.23

Borg-Warner Corp.:
Acquiring Tillotson, 12/15, p.19
Gear Div. supplies Japanese automaker with automatic transmissions, Datsun lines, 10/6, p.29
Ventures in Europe, 11/10, p.24

Bozung Co., J. A.:
Tough tubes bending, Boeing 747, 12/8, p.27

Braner Engineering Inc.:
Press compacts, bands coils, IE, 9/29, p.93

Branson Instruments Co.:
Ultrasonic cleaning is automatic, 12/22, p.34
Ultrasonic thickness gaging system, IE, 12/22, p.58

Brenco Inc.:
Forging line for bearings, 7/14, p.30

British Steel Corp.:
Expansion plans, 7/21, p.21

Brush Instruments:
Eight channel recorder, IE, 11/24, p.80

Bryant Grinder Corp.:
Internal grinder redesign, IE, 12/22, p.58

Bunker-Ramo Corp.:
Lathe control, less programming time, IE, 12/1, p.62
NC equipment, larger role in electronics industry, 9/8, p.65

Burgmaster: See Houdaille

Burroughs Corp.:
Computer data moved from keyboard to tape, new electronic machines, IE, 11/3, p.67

Byers, A. M., Co.:
Only U. S. wrought iron producer closes doors, 12/29, p.12

C

CPC International Inc.:
Repairs made in advance triples fanwheel blades, 9/22, p.36

C-R-O Engineering Co.:
Automatic drilling added to contour milling unit, IE, 7/7, p.114

CTI-Container Transport International Inc.:
Container leasing pools, 9/29, p.40d*

Cameron Iron Works:
Markets vacuum melted extrusions, 8/25, p.44h*

Carborundum Co.:
Acid handling simplified by graphite system, pickle bath heating approach, 12/22, p.35
Molten metal pumping unit, IE, 12/1, p.62

Carpenter Technology Corp.:
Acquires Titanium Technology, 10/27, p.21

Caterpillar Tractor Co.:
Inertia welding procedure, 7/14, p.45
Superfiche cuts cataloging costs, 7/7, p.80c*

Chase Metals Service:
Solliday: Metals users need new styles of thinking, 11/17, p.40m*

Chemetron Corp.:
Fewer fumes with burner-lance on electric furnace using a standard oxygen lance, 10/13, p.23

Chemical Construction Corp.:
OG process cuts air pollution, 8/11, p.26

Chrysler Corp.:
Amplex makes magnets for small

electric motors and loudspeakers, 9/15, p.58c* and 8/11, p.53†
Closes Windsor, Ont., foundry, 7/21, p.64
Cuts capital spending, 7/21, p.7
Economy drive initiated, layoffs, 10/20, p.15
Training center for hard-core unemployed, 7/14, p.23

Cincinnati-Forte Co.:
Scrap winder-baller on slitting line, IE, 8/18, p.75

Cincinnati Lathe & Tool Co.:
Tool changer has 15 hp spindle drive, IE, 11/24, p.80

Cincinnati Milling Machine Co.:
Acquires Company in Austria, plastics machinery, 10/27, p.17
Acramatic positioning/contouring NC system, IE, 12/8, p.126
Adaptive control on single spindle profiler at McDonnell Aircraft plant, 8/11, p.45
NC HydroTel, IE, 11/3, p.65
Ups NC center capacity, IE, 8/4, p.67

Cincinnati Shaper Co.:
Flip gage pares multiple bending cost, press brakes, 7/21, p.43*, 8/4, p.45†

Clark Control Div., A. O. Smith Corp.:
Drives tailored for web, strip, or film, IE, 12/29, p.57

Clark Equipment Co.:
Weighing system for fork lift trucks, IE, 11/10, p.82

Cleereman Machine Tool Co.:
Vertical machining center exhibited, IE, 12/8, p.123

Cleveland Crane & Engineering:
Girders house traveling crane components, IE, 11/24, p.80

Colt Industries Inc.:
Acquires Detterbeck for its P&W Div., 8/25, p.19
Crucible Materials Research Center tests nonconsumable electrode (Durarc)—can cut vacuum melting costs for Westinghouse, 7/7, p.80d*
Holley Carburetor Div. develops ice detector system for airport runways, 7/14, p.22
P&W new field—six spindle airfoil blade milling machine, IE, 12/1, p.66

Columbia Scientific Industries:
X-ray analyzer finds element's quantity, 12/8, p.71

Columbia Tool Steel Co.:
Tool steel foundry opened in Chicago, 12/8, p.29

Combustion Engineering Inc.:
Enters Swedish venture, 7/28, p.16

Commercial Shearing & Stamping Co.:
Motor brake torque rated, IE, 9/29, p.96

Computer & Programming Analysis Inc.:
Analyzer checks computer performance, IE, 11/3, p.66

Comsi Inc.:
Ken Baker: Computer consultants aim at service centers, 9/22, p.35

Concast Inc.:
Continuous casting facility for Lukens, 8/25, p.20

ConOx Corp.: See Managing for Productivity Series

Constant Conveyors Case:
Case study, 9/15, p.66
Compromise: Soft selling the hard line, 11/24, p.45

Continental Can Co.:
West German subsidiary builds corrugated container plant, 12/29, p.17

Continental Oil Co.:
Rust inhibitor for coating systems, IE, 10/20, p.65
Tarkington: Challenges his industry to welcome technology and social changes, 11/24, p.20

Continental Steel Corp.:
Acquired by Penn-Dixie, 7/28, p.15

Copperweld Steel Co.:
Ohio Steel Tube: Right decisions raise production, 7/7, p.63*, 8/4, p.46†
Rejects low with quality of raw materials, 12/15, p.30

Credit Research Foundation Inc.:
Collecting on accounts remains problem for suppliers, 10/6, p.19

Cyclops: See Universal-Cyclops

D

Data 100 Corp.:
Peripherals designed for remote operation, IE, 10/20, p.65

Data-General Corp.:
Minicomputer has desk top, rack versions, IE, 10/6, p.98

Davis Electric:
Variety of thermoplastics extruded on miniature wire sizes, IE, 10/13, p.84

Davmor Industries Inc.:
Spot-Stik film protects stainless strip prior to fabricating, 9/22, p.36

Dearborn Chemical: See Grace & Co.

De Beers Consolidated Mines Ltd.:
A new diamond abrasive makes possible grinding ductile metals, 7/7, p.65

Decatur Casting Co.:
Formed new company in merger with Hamilton Foundry, 10/13, p.21

DeVlieg Machine Co.:
Jigmil machines bigger parts, IE, 8/11, p.79

Diamond Machine Tool Inc.:
Benchmaster's punch press rated at 45 tons, IE, 12/15, p.60

Dickey & Son Machine & Tool Co. Inc.:
Tubing press, IE, 10/27, p.74

Digital Equipment Corp.:
Small process computer, IE, 8/25, p.64

DoAll Co.:
Microplane surface grinder—accuracy, IE, 7/14, p.69
Offers four NC vertical mills, IE, 8/11, p.83

Dodge Mfg.: See Reliance Electric

Dow Chemical Co.:
Aluminum deposition is electroless, new technique, 10/6, p.25
Doan: Social problems, solutions via profit power, 12/15, p.40
Hollow fibers for purifying brackish water via reverse osmosis, 8/25, p.18
Journal bearing tester also checks lubricants, IE, 7/28, p.53
Vapor degreasing solvent (cleans Boeing 747 engine), 12/15, p.40b*

Dravo Corp.:
Acquiring Mechling Barge Lines, 9/29, p.25

Dura-Coat Inc.:
Fluid bed powders cut rejects, 7/21, p.43

E

Easco Corp.:
Acquired Superior Industries Inc., 12/29, p.17
Acquiring Greiner and Diversified Properties, 8/4, p.19

Eaton Yale & Towne Inc.:
Acquiring Quay-Norris Mfg., 8/4, p.19
De Windt, world-minded leader, 9/15, p.29
Eaton Marshall Div.: Forecasts rise in hydrostatics, 11/24, p.11
Farval vortex lube system, improved mist control, IE, 9/29, p.96
Fawick Airflex air clutch control, IE, 12/15, p.60
McQuay-Norris merger, 10/11, p.24

Edgcomb Steel & Aluminum Corp.:
Acquires Syracuse Steel Service, 7/28, p.15

Edie & Co. Inc., Lionel D.:
Kilbert advises steelmen—develop new markets, 11/10, p.38
Surveys show no letup in capital spending growth, 9/22, p.12

Ekstrom, Carlson & Co.:
NC drill handles plate, stacked sheets, IE, 11/10, p.79

El-Chem Machinery Inc.:
Electrochemical deburring machine, IE, 12/1, p.63

Enthone Inc.:
Process for blackening baths for steel alloy processing, 8/4, p.19

Equipment Mfg. Inc.:
Stacker handles prepainted sheets, IE, 8/18, p.75

Essex International Inc.:
Computerized system (CEDAC) to replace electrical circuitry in autos, researcher, 9/22, p.14

Etteo Tool & Machine Co. Inc.:
Eight station machine can drill, tap, IE, 12/29, p.58
Two-way automatic drilling unit, IE, 10/6, p.98

Euclid Crane & Hoist Co.:
Otis Elevator may purchase, 12/1, p.14

Ex-Cell-O Corp.:
Work center features, IE, 12/15, p.59

F

Fabco Mfg. Co.:
Acquired by Kelsey-Hayes, 7/28, p.8

Falcon Safety Products Inc.:
Paints with abrasive fillers, coating safety, IE, 7/14, p.74

Falconbridge Nickel Mines Ltd.:
Dahl: Nickel producers not laggard in striving to meet demands, 11/17, p.61
Dominican nickel to be mined, 7/7, p.29

Farmington Mfg. Co.:
Automatic indexing table, IE, 8/18, p.76
Rotary/linear table, IE, 8/25, p.66
Tilting feature of rotary tables, IE, 8/4, p.69

Farval: See Eaton Yale

Fawick Airflex: See Eaton Yale

Fellows Gear Shaper Co.:
18-in. capacity gear shaper competes on cycle time, IE, 7/7, p.114

Ferguson Machine Co.:
Machining head holds constant feed rate, IE, 12/15, p.60

Ferraloy Inc.:
Aluminum powder metal parts forged, cover pic, 11/17

Fiberform Plastic Mfg. Co.:
Acquired by USI, 7/14, p.23

Ford Motor Co.:
1970 cars get rayon-belted tires, 10/6, p.29
Air pollution program expands, 7/28, p.16
Air pollution reduction program, 12/29, p.7
Car rentals by Sears, 9/8, p.15
Closed circuit TV monitors a scrap conveyor at stamping plant, 10/6, p.60e*
Compacts make for bigger sales, 7/28, p.18
Electron curing of paints on plastics, Saline, Mich., plant, 8/25, p.18
Falcon to be offered midyear, 12/15, p.17
Iacocca pans high-powered car push, 10/20, p.14
Isostatic pressing, study with Autoclave, 7/21, p.20
Mini car described, 11/3, p.15
Pilot coat coating line, 7/21, p.33
Pinion gears—computer control helps roll 27,000 daily, cold heading instead of screw machining, 8/18, p.34
Product reliability pushed for '70 model, 9/15, p.23
Skid control system (Kelstop) supplied by Kelsey-Hayes, K-H Gunite for trucks, 7/28, p.7
Sports car with mid-engine and Italian body, 10/20, p.14
Tractor operation expanded: Horsepower race down on the farm, 10/6, p.13

Formigli Corp.:
Gilligan, chairman, predicts rise in package deal bidding for steel and concrete markets, 12/29, p.14

Foxboro Co.:
Gas flow powers small computer, 12/22, p.15

Franklin Electric Co.:
Acquires Battle Creek Packaging Machines, 8/18, p.20

Fuller Co., H. B.:
Schubert: Hot melt adhesives and coatings report, 7/7, p.57

G

General Dynamics Corp.:
Computer process control alerts manager to breakdown, 7/21, p.41
Proposes construction of nuclear powered submarine tankers to haul Alaskan oil, 12/29, p.15

General Electric Co.:
Building an Applied Research & Design Center, Louisville, 8/4, p.18
Day speaker at NAM: Push for labor law reform, 12/15, p.16
Labor contract talks (IUE) bog down, 7/21, p.16
Labor negotiations, best offer first approach, 11/24, p.30
Labor talks start with UE, 8/4, p.15
Prefab control pulpit (steel mills) can be plugged in on site, called construction approach Uniplex, 7/14, p.41
Struck managers man machines, 12/8, p.25

General Mills Inc.:
Epoxy paints, water based approach, 7/14, p.69

General Motors Corp.:
Chevrolet minicar for '71 may be GMini, 12/22, p.14
Chevy's DeLorean predicts '70s, 9/8, p.7
Cole: Excessive wage settlements—inflation, 9/8, p.6
Corvair's demise, 8/4, p.9
Kintigh: How to tackle last minute design change, 7/7, p.88d*
Oldsmobile foundry set for 1970, 8/25, p.19
Roche talks pricing, payroll, materials, 9/22, p.7
Truck activities realigned? Rumor of merging GMC Truck into Chevy, 10/27, p.20

Georgetown Steel Corp.:
Installs 'no frills approach' continuous caster, 12/8, p.73
Mill starts rolling, Jansen pleased about voluntary quotas into U. S., 7/21, p.19

Giddings & Lewis Inc.:
Gilman's MultiSense probe, IE, 9/22, p.61
Staff club: 'Meet you at the club' means party with a purpose, 8/25, p.45*

Gilman Eng.: See Giddings & Lewis

Gisholt Machine Co.:
Modules tailor lathe to production, IE, 9/29, p.93

Glidden-Durkee: See SCM Corp.

Globe Tapping Machine Co.:
Dial index machine, IE, 11/24, p.78

Goodrich Co., B. F.:
Alexander: Tips on investing abroad, 12/1, p.15

Gorton Machine Corp.:
A Milwaukee-Matic for Kearney & Trecker unit, IE, 11/17, p.91

Gourdine Coating Systems Inc.:
Electradyne spray coating systems, IE, 9/8, p.65

Grace & Co., W. R.:
Dearborn Chemical primer pigments inhibit corrosion, IE, 9/22, p.61

Greenerd Press & Machine Co. Inc.:
Press, rotary table compacts chemicals, IE, 12/22, p.58

Gregory Industries Inc.:
Nelson Stud Welding power supply, broader range of dc, IE, 9/29, p.102

Grieve Corp.:
Electric batch oven, IE, 7/7, p.109

Grimm & Co., W. T.:
Corporate mergers, spin-offs up, 11/10, p.17

Grumman Aerospace Corp.:
F-14 slug riveter controlled by computer tape, 12/22, p.13
Topless freezer sunk in ground saves time, 11/17, p.64b*

Gulf & Western Industries Inc.:
Acquisitions bring wide diversification—gets manufacturing operations into line, 11/24, p.50

H

H. E. S. Machine Tool Inc.:
Surface grinder, IE, 11/3, p.69

Hamilton Allied Corp.:
Formed in merger, 10/13, p.21

Hardinge Bros. Inc.:
Adds chucker for short, medium runs, IE, 7/14, p.71
Automatic chucker features, IE, 11/24, p.77

Harnischfeger Corp.:
AC drives improves bending roll, IE, 11/17, p.94

Harshaw Chemical Co.:
Plating system, IE, 11/24, p.78

Heald Machine Co.:
Acramatic control system for machining centers, IE, 12/22, p.58
Cam bore-matic has hydrostatic ram, 10/20, p.63

Heldrick & Struggles:
Executive shortages, three factors affection mobility, 7/21, p.18

Hewlett-Packard Co.:
Adds printer to calculator options, IE, 9/15, p.130

Hilco:
Merger into Armco, 7/28, p.15

Hoffman Co., P. R.:
Lapping machine tailored for unskilled help, IE, 9/8, p.67

Holley Carburetor: See Colt Industries

Holotron Corp.:
Add ultrasonic holography to NDT, IE, 10/20, p.63

Honeywell Inc.:
Automation emphasis, Keating predicts, 8/25, p.18
Infrared devices for measuring temperatures, growth steady, 7/7, p.25
Magnetic films deposited via electroless deposition, report of Kefalas, EDP Div., 7/7, p.27
Pegboard matrixes aid programming a lathe or milling machine, 8/4, p.20
Pollutant content tester, 12/29, p.7

Horsburgh & Scott Co.:
Parallel shaft reducers, IE, 9/22, p.61

Houdaille Industries Inc.:
Acquires Logan Eng., 9/29, p.25
Burgmaster acquires Hughes Aircraft Dualcenter line, 9/15, p.29
Burgmaster line of low priced NC drills for small shops, IE, 9/29, p.96
Buys Kaufman Tool, 11/10, p.24
Punch press handles 36 in. sheet depth, IE, 7/28, p.51

Hughes Aircraft Co.:
NC 60p system, IE, 11/3, p.66

Hughes Tool Co.:
Huge hot header purchased from Ajax, 9/8, p. 15

Humble Oil & Refining Co.:
Can tankers bring in Alaskan oil, 8/18, p.17
Computers shape up supertankers build by Avondale Shipyards, 9/15, p.80d*
Wright addresses NAM: Details impact of oil quota removal, 12/15, p.15

Hydra-Tool Co. Inc.:
Hydraulic press in 40 or 80 ton capacities, IE, 7/7, p.113
Hydraulic shear, IE, 11/10, p.81

I

Index Machine & Tool Co.:
Ram and turret milling machine, IE, 10/13, p.85

Indian Head Inc.:
Enters automotive field—stalks Detroit, 11/10, p.11

Inland Steel Co.:
Buys computer interest, On-Line Decisions Inc., 11/3, p.19
Merger planned with Scholz Homes, 10/6, p.25

Industrial Nucleonics Corp.:
Thickness gage checks metals, nonmetals, IE, 7/14, p.69

Ingersoll Milling Machine Co.:
Cylinder block boring lines for automakers, change in tools, bearings, 9/8, p.64c
EDM line sold to South Bend Lathe, 8/11, p.30

Ingersoll-Rand Co.:
Air and electric motor and hoist plant, Roanoke, Va., dedicated—State trains workers, 9/22, p.20

Inland Steel Co.:
Bar mill 12 in. opened at Indiana Harbor Wks., 8/4, p.18
Diversification program into nonsteel studied, 9/29, p.25
May merge Scholz Homes, 12/1 p.14

Interlake Steel Corp.:
Continuous casting machine dev., features a four piece mold, 9/8, p.14
Expands in Europe, 8/25, p.20
MacDonald addresses Ill. State Chamber of Commerce: Steel, packaging bright in 1970, 11/10, p.53

International Business Machines Corp.:
Computer (System/360 Model 195) to handle jobs ranging from airline reservations to massive scientific studies, 8/25, p.17
Expands teleprocessing line, IE, 7/21, p.67
Low cost computer system for small business and large firms decentralizing, 8/4, p.17
Selectric typewriter plays back from magnetic card, IE, 10/27, p.74
Shop control and data communications additions, 7/21, p.20
Uses new zinc base foundry alloy (ILZRO 12) at Rochester, Minn., plant, 7/7, p.88e*

International Harvester Co.:
Emergency generator turbine powered, IE, 12/8, p.123
Four wheel drive for latest truck-tractors, over-the-road hauling, 7/14, p.23
Hiring dropouts, hard-core, 9/22, p.20

International Nickel Co. of Canada (Ltd.):
Price settlement offered USA, 11/17, p.21

Interprise Inc.:
Cover pic: Black capitalism, 12/29, p.24

Ipsen Industries:
Vacuum furnace brazes aluminum without flux, IE, 12/15, p.62

Itek Corp.:
Interferometer — positions, measures, IE, 9/15, p.129

J

Jacobsen Mfg. Co.:
Merger into Allegheny, 7/28, p.15

Jal-Donn Modular Buildings Inc.:
Formed by J&L and Donn Products — assembly line housing, 8/25, p.23

Jones & Laughlin Steel Corp.:
Computer technology in nonproduction gets emphasis, 7/21, p.20

K

KMS Industries Inc.:
ECM version of a building block, IE, 10/27, p.73

KSF Chemical Processes Ltd.:
Pollution control system for picklers, 12/8, p.88g*

Kaiser Aluminum & Chemical Corp.:
Executives forecast aluminum price hikes to continue, 11/24, p.21
Forms trading subsidiary, 8/4, p.21

Kaiser Engineers:
BOF growth, pinpoints U. S. additions, 11/10, p.19
BOF steelmaking, capacity grows (firms), 7/7, p.27

Kaiser Industries Corp.:
AMC buys Kaiser Jeep, 12/15, p.9

Kaiser Steel Corp.:
Cold rolled sheet output up with new temper mill, 11/10, p.24
Considers 2nd steel facility on West Coast, 12/1, p.28b*
Management intern program for students, 10/27, p.17
Steel imports rise on West Coast, researchers report, 12/15, p.15

Katy Industries Inc.:
Acquiring American Gage, 8/18, p.20

Kaydon Engineering Corp.:
Match grinding method processes large positioning tables, 7/7, p.80e*

Kearney & Co. Inc.:
Beat a broad path to the executive suite—getting to the top: Schiller report, 8/11, p.76b*
Distribution concept, Wendell Stewart, 8/11, p.37

Kearney & Trecker Corp.:
Tool changer patent found valid by district court judge, 12/8, p.21

Kelsey-Hayes Co.:
Skid control system for Ford, Drum & Brake Div., 7/28, p.7

Kennametal Inc.:
Indexable insert milling cutters, 9/8, p.64b

Kennecott Copper Corp.:
Milliken: No material is forever—changes in technology, 11/24, p.47
Patent issued for recovery of molybdenum and rhenium, 8/4, p.19

Kramer, Barry Inc.:
How to find a better job, 7/14, p.34

Krauss-Maffei Corp.:
Rotating molds turn out plastic toys, furniture, 9/29, p.40a*

L

Lamb Co., F. Joseph:
Acquires Earl A. Thompson Mfg., 10/20, p.16

Landis Machine Co.:
Thread rolling unit, IE, 7/14, p.70
Two thread rolling heads dev., IE, 9/8, p.67

Lau Blower Co.:
Merger plans into Philips Industries, 8/25, p.19

Lear Motors Corp.:
Working on gas turbine/electric cars, 12/15, p.17

Leeds & Northrup Co.:
Process controllers handle many types of loops, IE, 11/3, p.69

Leland-Gifford Co.:
Deflection minimized in drilling unit, IE, 11/17, p.102

Lewellen Mfg. Co.:
Rotameter accessory for speed transmissions, IE, 10/6, p.95

Lincoln Electric Co.:
Welding electrode, IE, 11/10, p.80

Linde Div.:
Underline power lines in new development program, 7/7, p.25

Lisle Corp.:
Casting analyzer, IE, 11/10, p.80

Lockheed Aircraft Corp.:
Air freight terminal for L-500 slated, 7/28, p.19
Childs: Finding ways for government-industry to interface to solve national problems, 9/22, p.23
Graphite replacing steel in brakes of TriStar L-1011, 12/29, p.16

Loctite Corp.:
Fast curing epoxy bonds materials, IE, 8/25, p.64
Industrial service kit with adhesives, sealants, IE, 10/13, p.86

Loma Machine Mfg. Co. Inc.:
Automatic handles 20,000 lb slabs, 8/11, p.60b
Slab casting and sawing system for Revere Copper, 7/7, p.80e*

Lucas Machine Div.: See New Britain Machine

Lukens Steel Co.:
Buys continuous casting facility (Concast), 8/25, p.20
Continuous caster planned, 7/21, p.20

M

3M Co.:
Copiers, microfilm unit, IE, 11/10, p.79
Diamond wheels offered, IE, 8/4, p.68
Huebner: Microencapsulation wrappings, 11/10, p.34
Nextel coating for diecastings, 11/17, p.40h*
Nonflammable adhesive is water dispersed, IE, 10/13, p.85

M & T Chemicals Inc.:
Acquires Cruickshanks Div., 11/17, p.25
Fluid bed powders cut rejects, 7/21, p.43*, 8/4, p.45†
Nickel plating process leaves ductile deposits, IE, 7/21, p.67

MSL Industries Inc.:
Autonomous purchasing, no need for centralizing, 12/1, p.39

Maclodyne Co.:
Curvit Div. shows largest NC bender, IE, 10/27, p.73

Magnaflux Corp.:
Crack detector also checks properties, IE, 12/8, p.129

Magnavox Systems Inc.:
Machine for Nextel coatings (diecastings), 11/17, p.40h*

Maichle & Wytmar Inc.:
Executive compensation advances, 11/24, p.29

Code: *—*Metalworking Edition only;* †—*Metalproducing Edition only;* IE—*Industrial Equipment*

Marcona Corp.:
Loading and discharging slurried iron ore concentrates, 8/4, p.19

Master Mfg. Co.:
Machining of opposed faces on double end facing and driller, IE, 11/24, p.77

Materials Research Corp.:
Fits sputter coating to production, IE, 12/15, p.59
Ultrapure aluminum produced, 8/4, p.20

Mayfran Inc.:
Scrap conveyor line for U. S. Steel, 9/22, p.36

McConco:
New venture of McLouth, Concast, 11/3, p.20

McKinsey & Co.:
Chief executives salaries, 11/24, p.29

McLouth Steel Corp.:
Forms McConco in Detroit, joint venture with Concast, 11/3, p.20

Meaker Co.:
Electroless process, IE, 8/4, p.68

Metal Improvement Co.:
Shot peener, IE, 10/20, p.65

Metals Research Instrument Corp.:
Computer analyzes images, 12/29, p.28

Meteo Inc.:
Metallizing gun for CPC, repairing fan blades, 9/22, p.36

Micromatic Hone Corp.:
Tandem honers finish engine parts, IE, 11/24, p.78

Midland-Ross Corp.:
Electric furnace fed with pellets, Gilmore Steel, 11/17, p.25
Selling IRC Fibers Div., 11/3, p.19

Midvale-Heppenstall Co.:
Huge isostatic pressure cylinder takes shape, fabricating pressure vessel, 8/25, p.32
King-sized forging for powerplant's nuclear reactor, 12/8, p.29

Milford Rivet & Machine Co.:
Acquired by Raybestos, 8/18, p.20

Molded Fiber Glass Companies Inc.:
Merger into North America Rockwell rumored, 11/24, p.22

Monarch Machine Tool Co.:
Enters bar facing, centering field, IE, 8/11, p.79
Mill-drill, two machines in one, IE, 9/22, p.59

Monarch Marking Systems Inc.:
Flashlightlike device simplifies inventory taking, 12/29, p.16

Motch & Merryweather Machinery Co.:
Fluidics pare moving parts from chucker, IE, 12/29, p.57

N

National Broach & Machine Div.:
Machine roll finishes spur, helical gears, IE, 10/13, p.84

National Cash Register Co.:
Microencapsulation: Capsules for packaging, cover pic, 11/10
Superfiche system, microfilm records keeping, 7/7, p.80c*

National Lead Co.:
Opens German plant, 7/21, p.21

National-Standard Co.:
Ultrasonic cleaner deburrs, degasses, IE, 7/28, p.53

National Steel Corp.:
Great Lakes five-stand billet mill and heating furnace tied to four-strand continuous caster, 11/3, p.20
Weirton: Continuous cast steel, quality for steel products, 10/13, p.21
Weirton's continuous slab caster pays consumer dividends, 10/20, p.23

Navan Inc.:
P/M tapped for diamond wheels, 7/28, p.14

Nelson Stud Welding: See Gregory

New Britain Machine Co.:
Horizontal boring mill teams accuracy, flexibility, IE, 7/21, p.65
Lucas adds ability to horizontal boring mill, 7/14, p.23
Lucas boring mill, SCR feed drives, IE, 11/10, p.81
NC vertical chuckers, IE, 7/7, p.107

Newcor Inc.:
Spotwelder assembles variety of parts, IE, 12/29, p.57

Niagara Machine & Tool Works:
OBI press tailored for automation, 11/3, p.69
Press brakes, IE, 10/13, p.84
Revises IB line of inboard drive press brakes, IE, 7/14, p.70

Nielson Co., A. C.:
1970 census awaited, 7/7, p.19

Nippon Seiko K. K.:
Bearing plant being built in Australia, 12/29, p.17

Nordson Corp.:
Heater provides spray control, viscosity, IE, 7/7, p.109
Hot melt adhesives and coatings, report of Hogstrom, 7/7, p.58
Hot melt gun useful for packaging, IE, 8/25, p.64

North American Rockwell Corp.:
Merger with Molded Fiber Glass, 11/24, p.22

Norton Co.:
Grinding system removes metal, 500 lb per hour, IE, 8/18, p.76
Nelson: Manufacturer looks at distributor's future, 11/10, p.48

Nutron Corp.:
Fluid motors, IE, 7/7, p.109

O

Ohio Steel Tube: See Copperweld Steel

Olin Corp.:
Acquiring Turner Corp., 11/10, p.24

Olivetti Numerical Control Inc.:
Invades U. S. markets (the wolf's den), 8/25, p.37

Omark Industries Inc.:
Riveting machine controlled by NC tape, 12/22, p.13

Optomechanisms Inc.:
Interferometer checks table position, IE, 10/6, p.91

Oregon Metallurgical Corp.:
3rd producer of titanium sponge, 7/28, p.21

Oregon Steel Mills Div.:
Electric furnace fed with pellets, 11/17, p.25

Otis Elevator Co.:
May acquire Euclid Crane, 12/1, p.14

Overmyer Co.:
Intermodal system to speed freight, terminal system, 7/14, p.68b*

Owatonna Tool Co.:
Hydraulic clamp on turret drill, 10/20, p.40

P

Pacific Press & Shear Corp.:
Press can form, punch, blank, trim, IE, 10/20, p.64

Pannier Corp.:
Marking system stamps hot slabs, IE, 8/4, p.68

Park-Ohio Industries Inc.:
Acquires Burke Steel, 8/18, p.20
Induction heater made for shrink fitting, IE, 8/11, p.83

Patent Management Inc.:
Patent rights for Russian electroslag refining process, 10/6, p.25

Penn-Dixie Cement Corp.:
Acquires Continental Steel, 7/28, p.15

Pennsylvania Engineering Corp.:
Giant electric furnaces, steelmaking's latest trends, 10/20, p.14
'No frills approach' to continuous casting, 12/8, p.73

Petroleum Refinery Australia Ltd.:
Checks underwater steel piling by immersion ultrasonic testing techniques, 12/29, p.16

Pfaudler Co.:
Flux saves back gouging of welding seams, 10/20, p.40

Phelps Dodge Corp.:
Startup of Tyrone copper mine, N. Mex., 12/8, p.27

Philadelphia Gear Corp.:
In-line reducer drives, IE, 11/10, p.80

Pickands Mather & Co.:
Prenco: Waste liquid system minimizes pollution, 8/11, p.90

Pines Engineering Co. Inc.:
Tube measuring system, IE, 10/27, p.74

Pittsburgh Corning Corp.:
Development of burn-off process for removal of oil slicks from water areas, 12/29, p.15

Portec Inc.:
Acquiring Butler Equipment, 9/15, p.29

Powermatic-Houdaille:
Hydraulic feed speeds band saw production, IE, 10/6, p.95
Manual surface grinder has magnetic chuck, IE, 11/10, p.80

Precision Group Inc.:
Turn-O-Surf grinder, IE, 12/1, p.63

Predicasts Inc.:
Fluidic controls sales studied, 10/20, p.25
Recreation equipment sales forecast, 12/8, p.23

Prenco Products:
Impregnation system, automatic control, IE, 11/17, p.98

Pressure Blast Mfg. Co. Inc.:
Rotary table on dry blast machine, IE, 12/1, p.63

Profile Plastic Coatings Inc.:
Fluid bed powders cut rejects, 7/21, p.43

R

RCA Industrial & Automation Systems:
Assembly system rejects malformed fasteners, IE, 11/24, p.78
Handling system controls small parts, IE, 8/4, p.67
Optical detector checks surface flaws, IE, 8/25, p.66

Rampe Mfg. Co.:
Orbital finishing systems, IE, 11/10, p.81

Ranco Inc.:
Computer testing of thermostats, 9/15, p.25

Rand Corp.:
Lederer Jr.: Industry moving slowly in adopting social conscience, 12/8, p.88g*

Ransome Co.:
Drop center positioner, IE, 11/3, p.67

Raybestos-Manhattan Inc.:
Acquires Milford Rivet, 8/18, p.20
Disc brake capacity being expanded, 12/29, p.17

Raytheon Co.:
Merger with United Engineers, 8/18, p.20
Mini Furnace, joint venture with South Wales firm to market in UK, 7/14, p.21

Reliance Electric Co.:
Dodge Mfg. extends size of shaft mounted reducers, IE, 9/15, p.130
Electric motors, materials are success story, 10/13, p.37
Right angle gearmotor line expanded, IE, 7/14, p.70

Reliance Steel & Aluminum Co.:
Simple stacker speeds shearing, 10/20, p.40

Republic Steel Corp.:
Acquires A. Finkl, 10/6, p.23
Air pollution control equipment at S. Chicago plant, 8/11, p.27
Enters land development business, Birmingham areas, 8/4, p.19
Modern bar mill, Buffalo district plant, 9/29, p.57

Revere Copper & Brass Inc.:
Loma automatic handles slabs, 8/11, p.60b
Slab casting and sawing system (Loma), 7/7, p.80e*

Revere Extruders Inc.:
Extrusion and anodizing plant on stream, 8/25, p.19

Rinfret-Boston Associates Inc.:
Dr. Rinfret: Would uncurbed inflation ease itself?, 9/29, p.7

Robertson Corp., C. B.:
Saw feed system for small cross sections, IE, 7/7, p.109

Rockwell Co., W. S.:
Fluidized bed heater, IE, 10/27, p.78

Rohr Corp.:
Mabel-name of answer-back computerized manufacturing control system (tabs on work in process), 7/7, p.48
Metal cleaning with vapor degreasing solvent from Dow: Mechanic installs cleaned tubing on Boeing 747 engine, 12/15, p.40b*

Rollins International Inc.:
Utility to supply pollution control, 10/27, p.20

Rucker Co.:
Electronic tracer controlled milling machine, 7/7, p.56

Runge Foundry Cost Systems Inc.:
Study: Cupola melting costs down, 7/14, p.22

Rust Engineering Co.:
Pollution solution, markets Swiss incinerator, Von Roll system, 7/14, p.36
Vamvakias explains utilitylike facilities to supply environmental control and antipollution needs, 9/8, p.11

S

SCM Corp.:
Glidden-Durkee reports royalties from foreign licensees pay research tab, 7/7, p.27

Satec Systems Inc.:
Hydraulic tester, IE, 7/28, p.53

Schaevitz Engineering:
Mini-Systems device pinpoints accuracy, 7/28, p.14

Schardl Linguistic Systems Inc.:
Language and cultural training for Americans dealing with foreign businessmen, 11/24, p.53a*

Schwitzer Steel Products of California Inc.:
Scrap shredder for autos installed, 11/10, p.76

Scientific Advances Inc.:
Fluidized bed prepackaged, off-the-shelf unit, 8/11, p.52

Scott Inc., H. H.:
Sound level meter, IE, 7/28, p.53

Sealed Air Corp.:
Air pares packaging costs, 12/15, p.30

Sears, Roebuck & Co.:
To rent out Fords, 9/8, p.15

Selas Corp. of America:
Agreement with West German firm

for engineering and marketing of heat exchangers, 12/29, p.17

Service Machine Co. Inc.:
OBI press line, IE, 10/20, p.65

Sheldon Machine Co. Inc.:
Electronic grinding gage system, IE, 12/29, p.56
Horizontal milling machines, pendant controls, IE, 8/4, p.69
Lathe, two-axis tracer, IE, 10/6, p.91
Mill spindle drives all geared, IE, 11/3, p.65

Sibson & Co. Inc.:
Pay hike through tax reform, 11/10, p.47

SIFCO Industries Inc.:
Steel Improvement & Forge Div.: Gas instead of coal solves pollution problem, 10/6, p.60

Silent Hoist & Crane Co. Inc.:
Crane operates on or off rail tracks, IE, 9/8, p.67

Smith, A. O., Corp.:
Acquires interest in Armor Elevator, 12/15, p.19
Acquiring Bull Motors Ltd., 11/17, p.25

South Bend Lathe:
Buys Ingersoll's line of EDM, 8/11, p.30
Lathe has finishing, roughing ability, IE, 12/8, p.132

Southern Iron Equipment Co.:
Build carrier cars to carry jumbo jet wings, 12/8, p.27

Sovereign Industries Inc.:
Mini steel mill considered, 9/15, p.29

Spiral Metal Co. Inc.:
Acquires Horton-Angell, 12/8, p.29

Standard International Corp.:
Acquisition of Torngren Co., 12/8, p.29
May buy Cape Ann Forge, 12/1, p.15

StarCut Sales Inc.:
Hydrostatic bearings part of gear shaper, IE, 8/18, p.76

Steel Co. of Canada:
Labor-wage settlement, 11/10, p.19

Steelmet Inc.:
Acquires three New England metal processing firms, 7/14, p.23

Steel Improvement & Forge Co.:
Gas instead of coal ups steam capacity, solves pollution problem, 10/6, p.60

Steel Suppliers & Services Inc.:
The 3-S case: How to groom upcomers, 8/4, p.30

Stone Hydraulic Industries Inc.:
Motor-pump fits modified ac motors, IE, 12/29, p.57

Stone Machinery Co. Div., Kysor Industrial Corp.:
75 hp cutoff machine has 44 in. wheel, IE, 12/29, p.56

Studebaker-Worthington Inc.:
Boat recovers spilled oil from water surface, 10/20, p.14

Subox Coatings:
Structural steel primer, white pigment base, IE, 10/20, p.64

Summit Machine Tool Mfg. Div.:
Vertical boring mill combines performance, price, IE, 11/17, p.91

Sundstrand Corp.:
Dial-in control system for mills, IE, 12/15, p.60

T

TRW Inc.:
Aerospace invests in new markets, 9/22, p.24
Computer spurs data boom, an information revolution: Muchmore, TRW Systems Group, 12/8, p.64
Computer tests strength of wrinkled thinwalled shells, 9/15, p.25
Development planning of acres in Ont., South Wellington-Waterloo area, 9/22, p.15
Mural symbolizes man's quest for knowledge (cover), 9/22
TRW puts tech spike into managers' punch: Panel seminars, 12/1, p.34
Training—team approach goes full circle, 7/21, p.30

Tarzian Inc., Sarkes:
The trouble with being small, how to expand profitably, 11/3, p.41

Taylor Instrument Process Control:
Adds liquid level transmitters, IE, 8/25, p.64

Technitron:
Resistance welders to go integrated circuit, 11/10, p.23

Tenco Industries Inc.:
Automatic chucker fills gap between models, IE, 7/7, p.113

Texas Instruments Inc.:
Rotary positioning readout system, benefits, 9/29, p.64d*

Textol Systems Inc.:
Way to convert rotary motion to linear, IE, 10/6, p.95

Therme King Corp.:
Snyder: Container investments running high, 7/14, p.19

Thomas Equipment Ltd.:
Hydrostatic drives, steer loader, IE, 9/22, p.61

Timken Roller Bearing Co.:
Capital expansion program set, 7/21, p.19
Capital improvement program of $214 million announced, 12/29, p.16

Titanium Technology Corp.:
Mitron process for producing titanium alloy castings, 7/28, p.24
New technology opens door to titanium market (castings, preforms, nonconsumable electrode process), 8/11, p.52† and 9/15, p.58b*

Titanium West Inc.:
Adds titanium furnace, 8/4, p.19

Titchener & Co., E. H.:
Wire winds up as precision chassis, 'skeleton design concept,' 7/7, p.65

Tool Steel Gear & Pinion Co.:
Floating gear drive, IE, 7/7, p.109

Torngren Co. Inc., C. W.:
Acquired by Standard International, 12/8, p.29

Torrax Systems Inc.:
Joint venture of Carborundum and Anderson Construction, 7/7, p.27

Transistor Electronics Corp.:
Programmable communications processor, IE, 8/18, p.76

Turn-Key Computer Applications:
MIS described by Ziegler at BEMA Symposium, 11/10, p.40

Tyco Laboratories Inc.:
Explosive forming flat blanks, preforming solves problems, 9/22, p.44a*

U

USM Chemical Co.:
Nitrile adhesive bonds, Bostick, IE, 8/4, p.69

Union Carbide Corp.:
Develops Congo mine, Belgian interests, 7/14, p.21
Expands Puerto Rican complex, 7/14, p.44b*
Forms a Ferroalloys Div., 10/13, p.21

Uniroyal Inc.:
Elastoplastic parts for cars, trucks, 10/6, p.21

United Air Lines Inc.:
Hiring dropouts, 9/22, p.20

United Aircraft Corp.:
Hamilton Div. prop teams titanium, fiber glass, 10/6, p.29

U. S. Industries Inc.:
Acquires Fiberform Plastic Mfg. (fiber glass boats), 7/14, p.23

U. S. Steel Corp.:
Expands ore plant, Minntac, 11/17, p.25
Galvanized couplings to replace copper, steel pipe, 7/7, p.80c*
Homes Div. builds classrooms, 11/24, p.22
Hunter: Steel firms object to air pollution code, 12/22, p.12
Price increases on flat rolled products, 8/4, p.56
Refractory plant planned, 7/28, p.15
Scrap conveyor handles chopped side scrap from pickling line, Gary Wks., 9/22, p.36
South Wks. to bring air pollution control compliance, 8/18, p.20
Steel studs vie for job in home building market, 8/25, p.44d*
Tax reform proposals biased—Tyson, 8/25, p.15
Water codes frustrating, 11/24, p.20

Universal-Cyclops Specialty Steel Div.:
Electroslag refining system scheduled, 9/29, p.25
Precision cold rolling, price comparisons, Titusville, Pa., plant, 8/4, p.40
Vacuum induction melting furnace: Now look what they're doing, 7/21, p.39

V

V & O Press Co. Inc.:
Fluidics applied to press controls, IE, 12/22, p.57
Vertical press pierces holes in drum walls, IE, 8/14, p.68

Vacuum Industries Inc.:
Furnaces handle continuous sintering, IE, 12/22, p.57
Quench furnace reaches 2000 C, IE, 8/11, p.83

Van Dorn Plastic Machinery Co.:
Adds hydraulic clamp machine, IE, 10/13, p.83

Van Straaten Chemical Co.:
Vibratory finisher, a continuous system, IE, 10/13, p.83

Vibra Screw Inc.:
Gravimetric feeder, IE, 10/20, p.66

Vishay Intertechnology Inc.:
Time saving testing material used in scale models, 12/29, p.16

Volkswagen:
Computer diagnosis of potential car problems, 11/17, p.40d*

W

WER Industrial Corp.:
Drive fits high response applications, 11/17, p.98

Ward-Riddle Co.:
Gun drilling heads, heavy duty, IE, 12/1, p.63

Warner & Swasey Co.:
Acquisition of G. A. Gray up to vote, 9/29, p.23
Improvements in 2AC single spindle chucking automatic, IE, 7/7, p.107
Servo drive packages, IE, 7/7, p.113

Warner Electric Brake & Clutch Co.:
Acquired majority interest in Precision Specialties Inc., 12/29, p.17
Keefer: Negates predictions of economic slowdown, 7/14, p.19
Shows large clutch brake, IE, 7/14, p.71

Waterbury Farrel:
Steel rolling mill gage control, 12/22, p.19

Waterbury Rolling Mills Inc.:
Mirrorlike bronze and nickel strip result of special rolling process, 7/28, p.14

Wean Industries Inc.:
Acid recovery in pickling, new pollution control, 12/8, p.88g*
Pollution market, Lackner new dir. of Environmental Control Div., 11/10, p.24

Wean United Inc.:
Baughman: Low speed strip mills win back favor, 12/1, p.41

Wells Electronics Inc.:
Dynablast cabinet, IE, 11/24, p.82

Western Supply Co.:
Heat exchangers, computerized tube applications, 9/15, p.80b*

Westinghouse Electric Corp.:
Adaptive control for rolling mill, dev at Hagan Computer Div., 12/8, p.27
Battery power for offbeat vehicles, 12/1, p.44a*
Burnham: Forecasts growth for 1970s, 12/22, p.14
Hardcore training program: How Westinghouse builds hard-core competence, 7/7, p.64
Load controller, IE, 10/20, p.64
Motor line redesign, IE, 11/17, p.102
Nonconsumable electrode (Durarc) reduces vacuum melting costs, Power Circuit Breaker Div., 7/7, p.80d*

Wheelabrator Corp.:
Vice president Blessing discusses air pollution control market boom, 12/29, p.18

Wheeling-Pittsburgh Steel Corp.:
Damage suit in Ohio against USWA, 8/11, p.21
Kindler forecasts steel consumption down in '70, 10/27, p.17
Sums up merger of Yawata-Fuji as 2nd largest steel producer, 11/10, p.15

Whirlpool Corp.:
Garbage compactor new, garage compactor dropped as a flop, 11/17, p.64a*

White Motor Co.:
Process computer tests engines for trucks, new Canton facility, 9/8, p.36

Whittaker Corp.:
Acquired Production Steel Co., 12/29, p.17
Hydraulic tracer (Koro-Matic) cuts two aircraft fittings from stainless, 7/7, p.55
Titanium West adds furnace, 8/4, p.19

Wyman-Gordon Co.:
Advanced Materials & Processing Dept. formed, 9/29, p.25

X

Xerox Corp.:
Hay: Management of change looms ahead (stimulate communication for innovations), 12/15, p.35
Listening, a tape method: Good listeners are good leaders, 10/13, p.50
Machine reduces paperwork, IE, 9/22, p.59
Paperwork explosion with new 7000 Reduction Duplicator, 9/15, p.23

Y

Yoder Co.:
Forming machine rolls sections, IE, 12/15, p.61

Youngstown Sheet & Tube Co.:
Lykes-Youngstown merger, directors added from 7 to 18, 12/22, p.16
Merger of Lykes—brokerage firm sues YS&T, 8/4, p.17

Z

Zurn Industries Inc.:
Acquisition of Goofriend-Ostergaard, 7/7, p.27